COLOTOMY

Inguinal, Lumbar, or Transverse

HERBERT ALLINGHAM

COLOTOMY,

INGUINAL, LUMBAR, AND TRANSVERSE,

FOR

CANCER OR STRICTURE WITH ULCERATION

OF

THE LARGE INTESTINE.

BY

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PREFACE.

The object of this book is sufficiently shown in the introductory chapter ; it is, what it purports to be, a collection of my experiences in the various operations of colotomy, and an attempt to arrange and explain in a systematic manner the principles that guide me in my practice.

For help given me in the preparation of the photographs I am indebted to Dr. Malcolm, Mr. C. T. Dent, Mr. Leared, and Mr. W. P. Ryall, and for professional and other assistance I have to thank Mr. Charles Mortlock and Mr. E. P. Jacobson. Other obligations are fully acknowledged in the text.

Herbert W. Allingham.

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COLOTOMY.

CHAPTER I.

INTRODUCTION.

On several occasions during the last few years I have published papers dealing with the question of colotomy, and I have deemed it advisable to issue this work, as it is the result of the experience I have gained on this important subject. However, I wish it to be clearly understood that I have no intention of writing a history of the origin, development, rise, and progress of colotomy in general, or of discussing and describing every one of the older methods of operating. It is therefore unnecessary for me to refer at any great length to the works of other authors, or to compile long tables of statistics based upon such study. My own experience of the subject will be found to

furnish matter for by far the largest portion of the book.

My essential object is to set forth as plainly as possible the advantages and the disadvantages of colotomy as a whole; to show the good points or the demerits of the main forms of colotomy, namely, left lumbar, right lumbar, left inguinal, right inguinal, and transverse; and to indicate when each one of these respective operations can be employed with the most beneficial results. I have thought it wise to enumerate all these five methods, but for the next few pages, and, indeed, during the greater part of the work, left inguinal and left lumbar colotomy will form the main topic of discussion. The transverse method will be described in its place; but as it is rarely used, it cannot yet be said to compete in importance with the inguinal and lumbar modes.

No doubt there may be a tendency for advocates of the inguinal method slightly to urge its advantages over the lumbar mode, but I am confident they would not assert that lumbar colotomy should never be resorted to. In this they do not follow the example of those veteran surgeons who confine themselves to praise of the older method, and who altogether ignore the advantages of inguinal colotomy, an operation

which, according to their own writings, they have rarely or never performed. Inguinal and lumbar colotomy alike would suffer from such biased opinions, and some surgeons might be dissuaded from trying both operations, and would thus be unable to judge which was the better to perform in the different circumstances arising in the course of their practice.

My former papers might lead it to be supposed that inguinal colotomy is the only one of these operations which I perform or countenance. That is not the case. At the outset, indeed, I was obliged to insist strongly on the merits of inguinal colotomy, so that others might adopt it, and that it might have an adequate chance of competing with its formidable opponent, lumbar colotomy, which had been earlier in the field. Now, however, inguinal colotomy has been fairly and freely tried, and I think we are in a position justly to compare it with the lumbar method. An endeavour may be made to assign to the two operations their due rank in surgery, and to ensure their employment on the most fitting occasions. If this attempt be successful, the full value of each operation will be brought out, and we shall desist from that old plan of using always the one or always the other, under which in certain conditions the method neglected was

safe and proper, and the mode actually employed was dangerous and wrong.

My remarks as to the injuriousness of bias with regard to any particular form of colotomy, apply as strongly to the old prejudice against the operation in general. Formerly, colotomy was regarded as an extreme measure, which was only to be employed in cases where the patient was nearly bursting from distension. It was considered to be dangerous and rash, though the danger resulted mainly from faulty modes of operating, and from the slighter attention to antiseptic precautions than is paid nowadays. The making of an artificial anus was held to be a nauseating device, and I have heard medical men tell their patients that they themselves would rather die in the utmost agony than have colotomy done to them. Such remarks are positively wicked and absurd, and probably proceed from men who have rarely seen the operation performed, and who know nothing of the suffering which it saves and the relief which it gives. Views of this kind must have been handed down by tradition from professional ancestors, who were as ignorant as the present holders of such opinions. Men of this stamp cherished the same antipathy to ovariotomy in the early days of that operation, and deterred

their patients from undergoing it. But such futile prejudices have been swept away by the energy and ardour of later surgeons, and the old notions against colotomy are sharing the same fate.

A survival of these ideas is the postponement of colotomy to the last possible moment. But we have now come to see that it is our duty not only to snatch patients from a distressful death, but also to relieve pain and discomfort in the earlier stages of their maladies, so that their remaining days may be made as peaceable as possible, and that death, when it does arrive, may come to pass with comparative ease.

I trust I shall not be charged with saying that every patient with cancer, or with ulceration combined with stricture, is, as soon as he is seen, when the malady is in an early stage, to undergo colotomy there and then. That would be as false and harmful treatment as to put off operating till obstruction had almost caused death. Such cases should be carefully treated by opiates, etc., and should be attentively watched. As soon as it is found that the patient is beginning to suffer from incessant diarrhœa, from profuse bleeding, or from great pain, which cannot be remedied by medicine, we may then fairly ask whether life

cannot be made less wretched, and whether colotomy is not best suited for that purpose.

When the patient is in such a state of suffering, his medical attendant should explain to him how matters really stand. If he be a victim of cancer, he should be told that he has an incurable disease which will grow, and that he may expect an increase of his discomfort, whether it be persistent diarrhœa, bleeding, or pain. He may then be informed that his trouble will probably be relieved by colotomy, but he must also be made to understand what colotomy means, viz., that the motions will always pass by the artificial opening. All questions asked should be faithfully answered, and the medical adviser should state what choice he would make, and what he would have done to him, if he were placed in similar circumstances. To strongly urge colotomy without fully explaining its meaning is obviously as wrong and as unfair as the prejudiced advice not to undergo colotomy, which I have so strenuously censured. Inveterate habit and ingrained ignorance may still sometimes prevent the performance of colotomy when it is really needed, but its advantages are constantly becoming more generally recognised. A careful consideration of the condition of the patient is the first

requisite, and then, when we have put away all preconceived notions, we shall be able to see whether colotomy is advisable or not, and shall be able to determine what method is best adapted to the particular case.

CHAPTER II.

THE CONDITIONS NECESSITATING COLOTOMY, AND THE CHOICE OF OPERATION.

We must now consider what are the conditions which call for one or other of the operations of colotomy, namely, left inguinal, left lumbar, transverse, right lumbar, or right inguinal.

Cancer in the rectum or in any part of the large intestine is one of the most usual of the maladies which necessitate colotomy.

There are three main divisions of cancer in the rectum which may be called its clinical varieties. The first is an annular growth which is rugged and irregular in shape; it narrows the gut, but does not occasion much pain, nor is it rapidly fatal. It is frequently found in aged persons. The principal trouble which it gives is from constipation or spurious diarrhœa, and its main danger is a possible obstruction of the bowel. The second form is a hard mass which is usually firmly fixed, and has a deep, ulcerated

opening resembling a crater. Great pain is caused by fæces collecting in the crater-like opening, or by the mass involving and pressing upon the sacral nerves. The third division is an ulcer which spreads exceedingly rapidly, and has great destructive powers, very quickly attacking the vagina or the bladder. It is most usually seen in young and middle-aged persons, and death often results in a few months.

In the sigmoid, descending, transverse, and ascending colons, cancer is generally an annular scirrhus-like growth, which gives rise to narrowing of the gut. Occasionally in any one of these positions the disease may be an extension of a cancer in one of the neighbouring organs, which, by its growth, pressure, or contractions, may narrow the colon in any of its segments. Putting aside the rectum, the most common places for these annular strictures and pressure-growths are at the sigmoid, splenic, and hepatic flexures, the order given representing the degree of frequency.

Narrowing of the gut may also follow from tubercular ulceration, syphilitic ulceration, or dysenteric scars or ulcers, with stricture. In the sigmoid flexure there may be traumatic or inflammatory conditions due to pressure upon the sigmoid intestine by the child's head

during labour, or to adhesions or contractions which result from neighbouring inflammation or abscesses. It is obvious that inflammations or contractions in the vicinity may similarly cause inflammatory conditions in any part of the colon. Last of all, there may be some congenital narrowing of the gut, necessitating colotomy either in early or in later life. But these states are rare, and need not occupy space in this work.

The question at once arises, when is colotomy called for?

The commencement of *obstruction* is the first point to be discussed. When the rectum is involved and an obstruction is felt and begins to be complete, it is needless to waste time by waiting. The administration of oil, injections, and so forth, is of no practical use, for they give but temporary relief, and the patient will be sure to have to undergo the operation later on, probably under much more adverse circumstances, when he is worn out and exhausted by distension. In such rectal cases, therefore, it is far better to perform colotomy as soon as the first definite symptoms of obstruction become manifest.

In other parts of the large intestine it is not wise to perform colotomy immediately, for there is no absolute certainty as to the nature of the

obstruction, which may be only fæcal, and its position is often very difficult to diagnose. In these cases, then, abstinence from solid food, belladonna, etc., should be first tried, and if they fail to give relief, colotomy may then be resorted to. If the first attack of obstruction is relieved, and its nature and position are doubtful, colotomy should not be done till after repeated attacks of slight obstruction.

A few further words as to the seat of the obstruction. When the growth or stricture is situated within the rectum, it can be felt, and a rapid decision can be made as to the time for performing colotomy; and if the stricture be innocent, it can be determined what other line of treatment is the best to pursue, *e.g.*, the use of bougies, division, and so forth. But when the obstruction is in any other part of the large gut, unless a mass can be felt, it is extremely difficult to tell what portion of the intestine is affected. It is then that, from fear of performing colotomy too early, it is advisable for the surgeon to wait until fairly definite symptoms are manifested of obstruction which cannot be relieved by drugs.

Pain is the next topic of importance.

Some of the cancers of the rectum give intense pain, for the motions may pass over an angry

ulcerated surface, or into a crater-like mass in which a portion of them may become lodged. When the motions pass over the growth they incite a strong desire constantly to go to stool, and the incessant straining gives rise to pain. Here colotomy is wanted to allay such suffering.

Cases of ulceration with stricture of the rectum are frequently combined with very large and extensive fistulæ, which spread from the ulceration in the rectum out into the buttocks. These fistulæ are often very numerous, and when fæces and flatus pass through them, the pain is extremely severe. For the relief of this and for the prolongation of a life which may be made better worth living, colotomy is demanded.

When proceeding from annular cancerous strictures in other parts of the colon, pain presents great variability. In some cases there is little or none till obstruction has become almost complete. In other instances it may be frequent, of a colicky nature, and spasmodic. The patient may then be able to state with approximate accuracy where the pain is, and thus lead the surgeon to discover the seat of the obstruction, and the most appropriate mode of colotomy.

Sometimes the upper parts of the colon are attacked by ulceration with its accompanying contraction, and many inches of the intestine are involved. The pain resembles that given by cancerous stricture, being often colicky, and occurring repeatedly, but it is not usually severe till obstruction, too, has become a marked symptom. Thus the two conditions become united, and conjointly require operation. I must observe that for pain alone in the higher parts of the colon, colotomy is seldom needed.

Bleeding is another state that may necessitate consideration. This is especially the case with a soft growth in the rectum, which is very vascular, and may be torn by the constant passage over it of fæces. The resulting hæmorrhage may then be very severe and dangerous, and if injections of astringents have failed, colotomy may be necessary to save life. Bleeding rarely occurs to any alarming extent with tubercular, syphilitic, or dysenteric ulcerations, and in these conditions seldom calls for operative interference.

The last state which may warrant colotomy is *diarrhœa*. This is notably the case when there is cancer of the lower part of the sigmoid flexure and upper part of the rectum, or when there is syphilitic or tubercular ulceration not only of the

lower, but also of the upper parts of the large intestine. This diarrhœa may be most intense, and may occur as frequently as twenty times a day, greatly distressing the patient, making his life absolutely miserable, and wearing him to death. When ulcerations from tuberculosis, dysentery, or syphilis cannot be treated successfully by mild remedies, colotomy, by cutting off the passage of fæces, allows the ulcerations to heal; and by the immediate stoppage of the incessant diarrhœa, the patients are restored to a better state of health. Of course, in order to bring this about, the colotomy must be well above the diseased portion of the gut.

It must be borne in mind that though I have considered all these conditions separately, as a matter of fact they are generally combined, and then more urgently call for colotomy. I have already stated that cancer, or stricture of the rectum or colon, often demands colotomy when obstruction is the only symptom. But there are cases when this obstruction is the smallest symptom, and when the patient with cancer of the rectum is far more seriously troubled in other ways, viz., he is in constant pain from motions passing over the growth, he has great tenesmus, he is terribly distressed by having to go to stool over and over again, night and day,

and, further, he incessantly passes blood mixed with slime. This combination of symptoms may occur in cases of cancer or of syphilitic or tubercular ulceration in the higher parts of the colon; but, as a rule, obstruction is the main symptom when the disease is in the upper part of the gut, and these conditions of pain, bleeding, and diarrhœa are not so well marked.

Colotomy, I must add, is even more necessary in tubercular or syphilitic conditions, when mild treatment has failed and the patients are running downhill, than it is in cases of cancer. Cancer is a mortal disease, and the sufferer's term of life will not be long. These other conditions are not necessarily fatal, and if the distressing symptoms are relieved and the passage of fæces is cut off, the rest from pain and irritation may allow the diseased parts to heal and the patient be enabled to live to a good age. The older school may dispute these views in consequence of their opinions as to the conditions of existence after colotomy has been performed, but I strongly hold to my contention.

The Choice of Operation.

We are now led to consider which colotomy is the best to perform in any particular circum-

stanees. This question of the ehoice of the operation is of extreme importanee.

First, let us take the cases when the obstruetion is in *the rectum*, and ean be easily felt and diagnosed. These ean be arranged under several heads.

1. Cases of very eomplete obstruetion. The obstruction having been complete, perhaps for ten or more days, the intestines are very distended, and it is necessary to open the gut at onee. Cases of this class are, I think, better treated by lumbar colotomy; for it is only when the intestine is very distended that it is possible or probable that the gut ean be opened without opening the peritoneum. My reasons for this assertion will be explained when I discuss the lumbar operation.

2. In the seeond division the obstruction is well marked and of a few days' duration, and the distension, though not very great, may at the same time be fairly marked. In this elass the choiee between inguinal and lumbar eolotomy may be left to the operator, for there is no great neeessity to open the bowel at once. It is better for the gut to be fixed up (say for twelve hours) till the peritoneal eavity is well blocked off by lymph, and thus made safe from extravasation of fæces when the bowel is opened. If the disten-

sion is very slight I should always choose the inguinal operation, but if it is well marked and the case borders on class 1, I should do lumbar colotomy.

3. The third variety comprises those cases in which there is very slight or no obstruction, and when the object of surgical interference is to relieve pain, irritation, or bleeding, or to diminish the rapidity of the growth. There is no doubt that inguinal colotomy is then the better method to employ.

The question of choice is further affected by the cause for the operation. If it is cancer which gives rise to obstruction only, with no pain and little diarrhœa, the surgeon is free to make his own option between inguinal and lumbar. But if the cancer causes great pain, diarrhœa, and bleeding, then, if possible, inguinal colotomy should be done, for a good spur can as a rule be procured, whereas in lumbar colotomy the making of a spur is much more a matter of difficulty, and is sometimes quite impracticable. When in the rectum there are non-malignant strictures, combined with tubercular, syphilitic or dysenteric ulcerations, and often with fistulæ, the importance and possibility of making a spur again demand inguinal colotomy.

There are other reasons for preferring inguinal

to lumbar colotomy. The opening is in front, and can be attended to by the patient himself with far greater facility than when it is in the lumbar region. Further, a pad or truss can be readily adjusted to the opening in the groin. The inguinal operation can be performed with much greater ease ; the patients usually get well much more quickly, and there is less risk of opening any other viscus than the colon. In all these points the inguinal is an advance upon the lumbar operation.

The three remaining forms of colotomy : transverse, right lumbar, and right inguinal, are very difficult to choose between. Of course, if there is a stricture the position of which can be diagnosed, or if, in cases of ulceration, the end, or rather the starting-point, of the ulceration can be told, then the rule is to perform the colotomy only just above the seat of that stricture, or of that stricture with ulceration. But this can only be discovered when there is a tumour or distension, or when the patient, from the pain and so forth, can indicate the locality.

On the other hand, if the case is uncertain, I think it always wise to start with a median abdominal exploration. The exploratory incision should be made above the umbilicus and the

hand be passed into the abdomen and down to the sigmoid flexure. It should next be traced upwards until the stricture is felt or the narrowing caused by the ulceration be found to cease. The colotomy should then be performed just above the seat of the obstruction. For instance, if the disease is about the splenic flexure of the colon, I choose a transverse colotomy ; if it is at or extends up to the hepatic flexure, I use a right lumbar colotomy ; if it extends lower down, I resort to the right inguinal operation.

Again, if an exploratory examination by the median incision fails to discover definitely where the ulceration ends, or where the stricture is seated in the large intestine, I think it is wiser to do a right inguinal colotomy, so as to make sure of being well above the diseased part.

I have said that I choose the operation which can be done nearest to the disease, that is to say, if the splenic flexure be at fault, I use transverse colotomy. My reason is that the length of the transverse mesentery gives a good chance of making a splendid spur ; but this opportunity is not always found in right lumbar, and never occurs in right inguinal colotomy.

There is another good reason for colotomizing as near the rectum as possible ; the higher one proceeds in the bowel the less solid the fæces

become. In left inguinal and in left lumbar colotomy it seems that the fæces are nearly solid, for the greater part of the large intestine is above them and absorbs their liquid portion. In the transverse operation the motions are generally, though not invariably, liquid. In the right lumbar and the right inguinal methods, as far as my experience goes, the fæces are always liquid, and are a continual source of annoyance to the patient later on—for motions are retained when solid, but are constantly discharged when liquid.

It is perhaps advisable to add that when the median exploratory incision has been made and transverse colotomy is decided upon, the lower part of the incision is brought together, the upper inch or so alone being utilised to bring the transverse colon through, and then fixed up into the wound. If the examination reveals the impossibility of a transverse colotomy, or of one lower down (*i.e.*, nearer the rectum), the incision is closed, and a right lumbar or right inguinal operation is proceeded with in the manner hereafter to be described.

CHAPTER III.

ANATOMY OF THE COLOTOMIES.

Before describing the various methods of performing colotomy, I think it well to devote a little time to the anatomy of the regions to be operated on. Not that I intend to enter into minute details, for they are useless from a surgeon's point of view ; but, at the same time, rough surgical anatomy may be found to be of assistance when any difficulties arise in the operations.

Left Inguinal and Right Inguinal Colotomy.

I will first discuss the anatomy of left inguinal and right inguinal colotomy, for the main features are alike—the only differences lying in the character of the gut and the variations in the arrangement of the peritoneum. The skin need not detain us, but the cellular tissue varies greatly, sometimes being very thick and extensive, especially in stout patients, whereas in

the thin there may be little or none whatever. The next structure of importance is the external oblique muscle, whose fibres run in the direction of the superficial incision, viz., downwards and inwards. Its thickness, of course, varies with the muscular development of the patient. As soon as this muscle is divided, the internal oblique is exposed, and may be recognised by the direction of the fibres, viz., upwards and inwards. The next object of interest is the last layer of muscle, the transversalis abdominis, which may be distinguished by the transverse direction of its fibres, which run from outwards directly inwards. When this has been exposed and divided, a thin layer of fascia comes to view, which is known as the transversalis fascia, and varies both in thickness and in colour. If the operator is not careful this may be mistaken for the peritoneum, and much time be wasted over it under that erroneous impression. Under this lies the subserous areolar tissue, which may present another pitfall ; for I have often seen it taken to be the omentum. This is more especially the case when the transversalis fascia has been opened in the belief that it is the peritoneum. This error, however, should never occur, for the fat of the subserous areolar tissue is very different from the fat of the omentum. It is usually

darker in colour and more consistent, and never bulges up through the opening in the transversalis fascia as the omentum does when the peritoneum is opened. For, when that is the case, the omentum, if near, bulges through, and even appears as it were to flow through the aperture in the peritoneum.

After the sub-peritoneal fat has been divided the peritoneum is reached. It is of a slatish-blue hue, and is as variable in thickness as most of the other structures I have described. The peritoneum, as is well known, lines the posterior surface of the belly muscles, and as it approaches the side of the belly is reflected from these muscles over the surface of the sigmoid colon, then over the iliac fascia and iliacus muscle, which occupy the concave anterior surface of the ilium. It is important to bear this in mind in connection with the two errors just referred to; for when the transversalis fascia has been mistaken for the peritoneum, and the subserous areolar tissue has been thought to be the omentum, and been burrowed about in, the peritoneum which covers the subserous areolar tissue may be pushed off the ilium and the search for the gut made over the surface of the ilium, the peritoneal cavity having never been opened at all.

Another important point in connection with

the peritoneum is the way in which it surrounds the sigmoid flexure.

As shown in Fig. 1, the peritoneum lines the abdominal muscles and then passes over the sigmoid, binding it closely down to the ilium (there being little or no play for the gut; in fact, there being little or no mesentery) and then being reflected over the surface of the ilium.

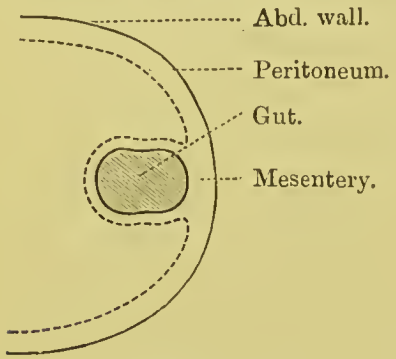

FIG. 1.

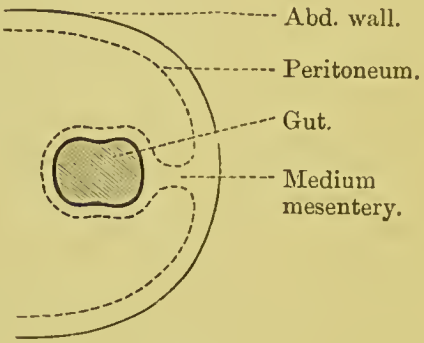

FIG. 2.

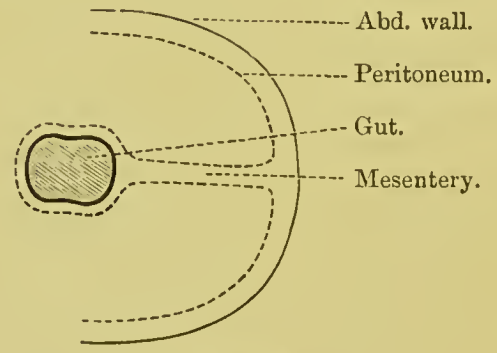

FIG. 3.

Fig. 2 represents the second state, when, in consequence of the reflection of the peritoneum, there is some movement of the intestine. Here there is what I would term a medium-sized mesentery. In Fig. 3 there is a long mesentery,

and thus there is free movement of the sigmoid flexure.

These three conditions only hold to any large extent in left inguinal colotomy, though at times, but rarely, they may apply to the cæcum. As a rule, however, Fig. 1 represents the state of the cæcum. Though apparently trivial matters, these points are of great importance from the surgeon's point of view, both with regard to operating and to the after welfare and comfort of the patient.

Lumbar Colotomy.

The regional anatomy of lumbar colotomy presents many affinities to that of inguinal colotomy, though there are differences. In the lumbar region the cellular tissue is usually more abundant. The first muscles divided are the external oblique and the latissimus dorsi, which are in the same plane. As in inguinal colotomy, the fibres of the external oblique run downwards and inwards, and behind this is the latissimus dorsi, the course of its fibres being directly downwards. This muscle (as is the case in all regions) is separated by a thin layer of cellular tissue from the internal oblique, whose fibres go upwards and inwards, the posterior ones running almost directly upwards. The next structure is the

lumbar fascia, which, if I may use the term, is the tendon of the transversalis muscle, a few of the posterior fibres of which may be exposed as it springs from the fascia. These fibres have a transverse direction. This fascia is very tough and thick, and is usually of a strong, fibrous nature. When the transversalis muscle and its tendon are divided, the anterior edge of the quadratus lumborum may be exposed, or may have to be severed, if it is large. The fibres of this muscle run vertically upwards, or incline slightly upwards and backwards. Nearly on the same plane as the quadratus lumborum, and under or posterior to the transversalis abdominis, is the transversalis fascia, which is intimately blended with the fat which is below or behind it, and in which, or rather amongst which, the kidney and colon are to be found. In the lumbar region, the subserous areolar tissue is very thick and abundant, and at times is difficult to distinguish from the peritoneum which it covers.

The next structure to be exposed is the posterior or outer surface of the large intestine, and then, as used to be said, *without opening the peritoneum*, there appear the longitudinal bands and appendices epiploïcæ.

Now, in order to explain when the longitudinal bands can really be seen, and when they cannot,

it is necessary for me to give a detailed description of the large intestine. I am compelled to do this, for it has been stated that, in lumbar colotomy, when the parietal peritoneum is *not* opened the longitudinal bands and the appendices can be seen, and that thus the large intestine can be distinguished from any other part of the intestinal tract.

We are aware that the large gut, from the

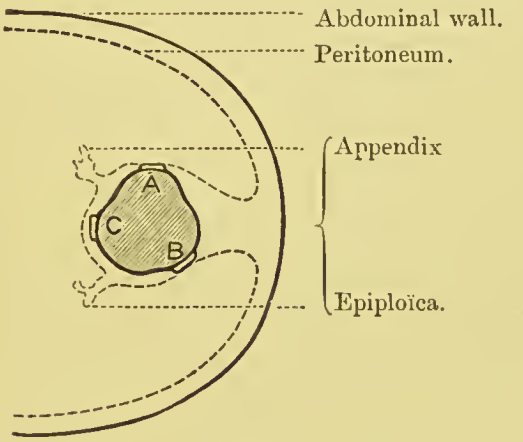

Fig. 4.

cæcum downwards, has two distinctive features. The first is the presence of the three longitudinal bands, one on the anterior surface of the gut, Fig. 4 (A), another on the posterior (B), and the third on the inner aspect (C). The second characteristic is that attached to the large gut are the appendices epiploïcæ, which occur on no other part of the alimentary canal. I have noticed that the peritoneum, as it is reflected from the an-

terior abdominal muscles, is loose, and that then, where it commences to surround the large gut, it becomes quite firmly adherent to the intestine at the longitudinal band A. It is now so fixed that it cannot be separated from the gut, it covers up band C, and is continued on to band B. Finally, from the posterior edge of B it may pass off the gut on to the posterior part of the abdominal wall. Thus Fig. 4 will show that the outer part of the gut is uncovered by peritoneum. However, I have already explained that this is by no means the usual state of things. If we look at the cases of a medium-sized mesentery (as in Fig. 2, p. 32), we see that the peritoneum is continued even further backward beyond and behind the bands A and B (Fig. 4), and thus forms a mesentery, and that hence little or none of the intestine is uncovered by peritoneum. In cases where there is a long mesentery (Fig. 3) this is even more marked, for then there is practically no part of the gut uncovered by peritoneum.

There is another important point which further disposes of the erroneous idea that the longitudinal bands can be seen without the parietal peritoneum being opened. Take a piece of large intestine, covered by its peritoneum, and carefully examine it. It will then be observed that

when the intestine is surrounded by peritoneum, the bands are most distinct, looking like white silvery lines, about a quarter of an inch broad. All three of them will usually be found to be well marked. But when examination is made of a piece of large intestine, uncovered by peritoneum, no band is visible. Further, if an attempt be made to strip the peritoneum off the intestine at A and B, the longitudinal bands will be seen to come away with the peritoneum, and then become lost ; or, if they do remain attached to the gut after the peritoneum has been removed, they are most indistinct, and badly marked.

The above, I think, will show how mistaken are those who hold that the longitudinal bands, as bright, shiny bands, can be seen without opening the parietal peritoneum. Probably, unknown to themselves, they have divided the peritoneum and so opened the abdominal cavity, for unless that cavity is opened, it is impossible to see the bands on the large intestine.

I contest in the same manner the assertion that the appendices epiploïcæ can be seen without opening the peritoneum. This, again, is an impossibility. These appendices are but small pedunculated masses of fat, enveloped by peritoneum (see Fig. 4), and attached to the inner aspect of the intestine. The diagram

shows that to view them it is absolutely necessary to open the parietal peritoneum. To see them on the non-peritoneal surface of the intestine would be impossible, for if not covered by peritoneum they would lose their distinctive characters, and become small masses

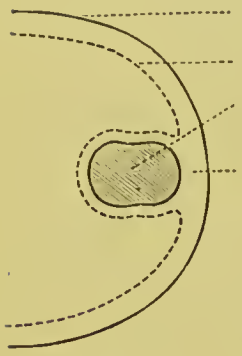

Fig. 5.

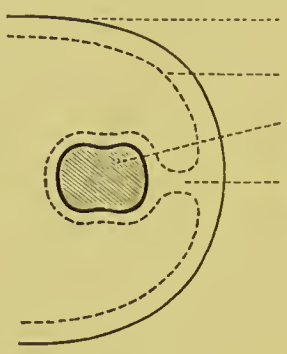

Fig. 7.

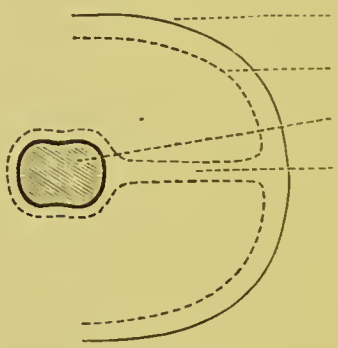

Fig. 9.

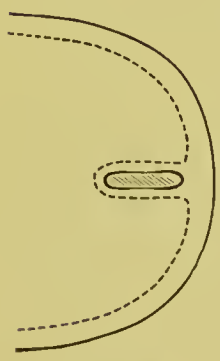

Fig. 6.

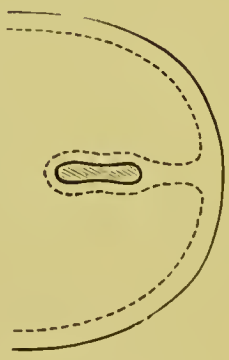

Fig. 8.

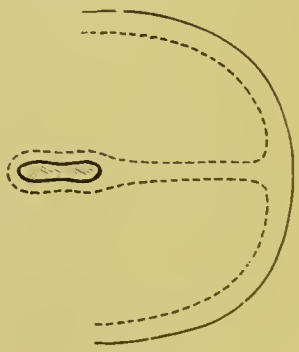

Fig. 10.

of fat, indistinguishable from the subserous areolar fat, which has to be worked through in the downward progress to find the gut.

There is a further point, the anatomical arrangement of the peritoneum, when the gut

is *distended* or *collapsed*. When, as in diagram 5, there is a *distended* gut, with little or no mesentery, the peritoneal reflexions are separated, and hence a good portion of the posterior or outer aspect is uncovered by peritoneum. Less surface is uncovered when, as in diagram 6, the gut is *undistended*. These alterations are of practical importance only when there is *no* mesentery, for when there is a medium mesentery, as in 7, distended gut, and 8, undistended gut, or a long one, as in 9, distended gut, and 10, collapsed gut, there is no separation to be seen which is of real surgical value.

Transverse Colotomy.

Transverse colotomy, as I have already observed, is usually combined with an exploratory abdominal section, the incision made being a median abdominal one. The anatomy is as follows : After the skin has been divided, some cellular tissue is met with, which varies in amount, and a few small vessels, which generally require attention. The next structure which is seen is the median raphe, and a little to the left of this may be observed the aponeurosis of the internal oblique ; this covers the next object for consideration, viz., the rectus abdominis, whose fibres run in a perpendicular direction

from above downwards. These fibres are divided, and we come upon the posterior layer of the fascia of the internal oblique ; this, too, is divided, so as to expose the subserous areolar tissue, and lastly the peritoneum. The transverse colon is now reached, and can be identified from its longitudinal bands and appendices epiploïcæ. It has a good mesentery, which is easily to be made out. Obviously, if the large omentum present, it may have to be pushed out of the way before the colon is arrived at.

In this sketch of the anatomy of the region I have described the anterior and posterior layers of the divided tendon of the internal oblique, with the rectus abdominis between them. Hence, it will be noticed that I take the incision through the rectus muscle, and not through the central point of union in the middle line, for at that spot there are no layers of the tendon of the internal oblique, and no rectus muscle is divided. However, I have purposely gone through the rectus, for I hold it to be the best incision, as it leaves a far firmer scar than when the incision is made in the median line. The latter is the usual place, but it is wrongly chosen, for a weak scar is often left, which may lead to hernia in the future.

If a division be made of the *right* rectus,

the round ligament of the liver may be seen after the posterior sheath of the rectus has been cut ; but I do not advise that the incision should ever be made except slightly to the *left* of the middle line.

CHAPTER IV.

THE OPERATION OF INGUINAL COLOTOMY.

We now arrive at the operation of inguinal colotomy. Though the right inguinal mode will receive brief mention, my discussion will be mainly of left inguinal colotomy, which is by far the most frequently performed.

There is no doubt that the operation is an old one, but it is only somewhat recently that it has come prominently forward and has been generally used. It has been performed in many ways, some of them good, some of them bad. It will be well to refer to the methods which have been suggested of late years, so that my readers may compare them, if they think fit, and may perceive by what means the operation has been improved in its various details. This comparison may lead them to propose further modifications. They may also be impressed by the necessity of preventing inguinal colotomy from falling into bad repute in consequence of surgeons repeating

the old blundering ways of operating, which have been shown to be useless, if not harmful.

Luke commenced the operation by making, in the groin, a perpendicular incision four inches long, and just outside the course of the epigastric artery. The sigmoid flexure was then sought for and pulled into the wound, the gut being opened at once. There are no advantages to be gained from this method, which has long passed out of use. It presents several disadvantages; the opening in the gut may be near to the seat of the disease, and, if the sigmoid has a short mesentery, it may be difficult to bring the intestine to the surface. Again, the immediate opening of the gut increases the risk of extravasation of fæces into the peritoneal cavity.

Reeves makes the ordinary incision used in inguinal colotomy; it is from 3 to 4 inches in length, and starts 1 inch above Poupart's ligament, extending from a point just external to the abdominal ring to a little below the anterior superior spine of the ilium. My experiments as to the choice and place of the incision showed that this position is less good than the one I use myself, viz., just internal to the anterior superior spine. Reeves passes sutures through the gut in order to fasten it to the skin. Now, this increases the risks of the operation, for gas, and sometimes

fæces, may find their way through the punctures made by the needle, and thus enter the peritoneal cavity.

Studsgard does the usual operation, but takes the following precautions in suturing, in order to obtain a good spur. I quote his own words: 'The lowest sutures are introduced into the intestine in such a way that a great part in front lies free between the two corresponding sutures, while the posterior ones are passed through the bowel, close to another in the neighbourhood of the mesentery; in this way a kind of spur is left at the lower angle.' Here, again, the needles are passed through the gut, and consequently some risk is incurred.

Madeling divides the intestine, and stitches the upper end to the wound, while he sews up the lower end of the divided gut and allows it to drop into the abdominal cavity. This is a hazardous proceeding, for while the intestine is being sewn there is a danger of fæces escaping, especially if they are liquid, or if the intestine is at all distended. Moreover, it is essential for the fæces accumulated in the lower portion of the bowel to be removed before it is sewn up. If they are allowed to remain, the growth (if it is a case of cancer) will prevent them from passing downward, ulceration will ensue, and the dis-

charge find its way into the peritoneal cavity. Further, as has occurred in several of my own cases, the gut may be twisted when it is pulled up into the inguinal opening, and fixed there. If this twisting be not discovered, the operator may sew up the upper end and drop it back, the lower end being stitched to the abdominal wall in the belief that it is the upper end. Needless to say such a mistake would result in the patient's death. Such a case has actually come within my notice.

Verneuil draws up the intestine, divides it, and attaches the two ends to the skin, so as to make a double-barrelled opening. Thus the motion in the rectal portion of the intestine can be washed out, or may discharge itself in a few days when peristaltic action returns. By this proceeding are to be incurred many of the dangers which may arise from some of the above methods of operating, *e.g.*, leakage of fæces into the abdominal cavity, and so peritonitis. Especially is this likely to be the case if the gut is at all distended.

In Mr. Cripps'* method of doing the operation an incision $2\frac{3}{4}$ inches in length is made $1\frac{1}{4}$ inches from the anterior superior spine, one third of the inch being above and two thirds below an

* *Brit. Med. Journ.*, October 6, 1888.

imaginary line drawn from the anterior superior spine to the umbilicus. In making this incision the skin should be drawn a little inwards, so that the opening through the transversalis fascia and the peritoneum is on a different level, when the skin is again relaxed, thus making the valvular opening, and rendering its subsequent closure with a pad easier. The peritoneum being reached, is pinched up and opened. . . . A loop of bowel being drawn into the wound, two provisional silk ligatures are passed through a portion of the peritoneal coat opposite to the mesenteric attachment. These provisional ligatures, the ends of which are 6 inches long, help to steady the bowel during subsequent stitching to the skin, and eventually serve as guides when the bowel has to be opened. They should be 2 inches apart. The bowel is now temporarily returned into the cavity. The parietal peritoneum is then attached to the skin on each side of the incision.

The bowel is again drawn out by means of the provisional ligatures, and fixed to the skin and peritoneum by six fine ligatures on each side. The ligatures should be passed not far from the mesenteric attachment of the gut, so that about two-thirds of the circumference of the bowel is external to the wound.

In my opinion, this mode of operating is tedious and unnecessary, taking a long time to perform, and, what is even more important, no good spur is possible, nor is it even attempted by this method. The drawbacks of this way of operating, and its after-results, will be pointed out in later pages of this work.

In Mr. Jesset's* operation for inguinal colotomy, the intestine is pulled through the opening and packed around with sponges. A band of india-rubber is passed through the mesocolon, and fastened tolerably firmly around the intestine as high up as possible to prevent the escape of fæces when the intestine is divided. The intestine is now cut across with scissors about 3 inches from its upper end, and the contents evacuated, and, if necessary, washed out with carbolized water. All bleeding points are secured. The divided end of the lower segment is to be invaginated, and a few catgut sutures passed through the serous and muscular coats to retain the invaginated part. This portion of the flexure is then allowed to drop back into the abdominal cavity. The divided end of the upper portion of intestine is next invaginated, and secured in place by means of a few catgut sutures, and the indiarubber band removed. All the sponges and packing are

* *Brit. Med. Journ.* 1889.

removed and the parts thoroughly washed. and the parietal wound closed in the usual manner, care, however, being taken that the suture just above the intestine should pass through its serous and muscular coats, and the suture below is made to pass through the mesocolon.

Two fine silk sutures also are passed through muscular and serous coats of the intestine and the abdominal parietes on each side, so as to be thoroughly secured from slipping.

On the fourth day the spur may be cut away on a level with the skin, all bleeding points being secured.

Mr. Jesset claims the following advantages: The diseased portion of the bowel is completely cut off from the upper segment.

The lower portion of bowel being invaginated and returned into the abdominal cavity, there can be no prolapse of the mucous membrane from it.

The upper portion of intestine being divided so closely to its origin, there is not so much danger of prolapse from it.

In Mr. F. T. Paul's* operation, incision was made in the left inguinal region, through which the sigmoid flexure was withdrawn. With the usual precautions, the bowel was divided in the

* *Brit. Med. Journ.*, July 18, 1891.

middle, the distal end invaginated as in Senn's operation, and returned into the abdominal cavity. Into the upper or proximal end a glass tube of an inch in diameter was tied, its fore end being attached to a rubber tube, to convey the fæcal discharge away from the wound. The piece of bowel was sewn to the edges of the wound, the suture passing through its musculo-serous coats, and the rest of the wound closed with the same. About 2 inches of the bowel projected beyond the wound, which was then dressed with iodoform and salicylate wool. Each day motion passed by the tube. After three days the projecting piece of bowel was cut away, good union having taken place, and in a short time a satisfactory artificial anus resulted.

Exactly the same objections may be applied to this mode of operating as to Madeling's operation previously described.

I now turn to the discussion of my own method, which I first published in the *British Medical Journal* in the autumn of 1887.

Whenever there is any possibility of choice as regards the anæsthetic, I prefer to use chloroform—not that it is safer than ether, but because it presents several advantages from an operative point of view. When under ether, patients are invigorated, but in chloroform anæsthesia they

are, as a rule, rather depressed, and therefore quieter. Thus their breathing is less rapid, and, when the operation is being done, the abdominal muscles do not move so much. Further, chloroform causes a greater relaxation of the muscles, and renders them easier to work in, whereas ether appears to stimulate them. If there is this stimulation, the fingers, when inserted in the abdomen, are gripped by the muscles, and cannot be used so freely.

Again, with chloroform there is never, or seldom, the straining which is noticed while patients are under ether. This straining, or coughing, naturally tends, when the abdomen is opened, to force its contents through the aperture, and, moreover, makes the muscles rigid. Sometimes, too, the stimulation of ether causes bleeding from small arteries and veins, in consequence of the congestion which is occasioned. This does not occur when chloroform is used, for it lowers the arterial tension. Attention to these details may render the operation easy and comfortable, whilst a disregard of these matters may make it difficult and irritating.

My instruments are as few and as simple as possible, viz., a small scalpel, about half a dozen of Spencer Wells' clips, a pair of dissecting forceps, scissors, and straight needles.

The patient is placed on a hard couch and anæsthetized, the legs and chest well covered with blankets, a mackintosh being over these, and wet towels over the mackintosh. The part, viz., the left or right inguinal region, is well cleansed and cleared of any hair.

Then, about $1\frac{1}{2}$ inches inside the left anterior superior spine of the ilium, and parallel with Poupart's ligament, I divide the skin and cellular tissue by an incision not more than 2 inches long, and frequently less. With a stroke of the knife, I sever the external oblique, and the other muscles, until the subserous areolar tissue is reached. This is picked up with two clip forceps, and divided. As soon as the peritoneum is opened (which may, as a rule, be told from some omentum forcing its way through the aperture), I introduce my finger into the opening, and with scissors divide the deep structures up to the extent of the skin-wound. I never use a director, which is a confusing instrument, and tends frequently to split up the structures into layers. If the operator has a keen eye and a light hand, all the structures down to the peritoneum may be divided with rapidity and certainty, and all such perplexity be avoided. As soon as the peritoneum is divided I secure it with clip forceps so as to prevent it being pushed

away ; moreover, when it is held up, it stops any oozing of blood from the cut muscles passing into the abdomen. A flat sponge, with a string attached (to prevent it being lost in the belly), is introduced to keep the intestines out of the way, and to catch any blood that might drain into the abdomen, while the parietal peritoneum is being carefully sewn to the skin all round by interrupted fine carbolized silk or catgut. This mode of joining the skin and the peritoneum induces rapid healing, and lessens the danger of discharge from the muscles finding its way into the peritoneal cavity.

Then the sponge is removed, and a search is made for the sigmoid flexure. In most cases it bulges into the wound, and is easily recognised by the longitudinal bands and appendices epiploïcæ, but occasionally the small intestine or the great omentum presents itself. When the large intestine does not appear, I pass my first finger into the abdomen, sliding it over the iliacus muscle until I arrive at the intestine, which I hook up to the opening with my finger and thumb. If this manœuvre fails, I search towards the sacrum, feel for the rectum, and trace the gut up ; should this not succeed, the finger must be passed upwards towards the kidney and the descending colon felt and traced downwards.

This usually has to be done when the mesentery is long, say 5 inches or more. The large intestine is much thicker and firmer to the feel than the small intestine, and can be distinguished from it by the ridges formed by the longitudinal bands.

When the gut has been found and brought to the surface, I pass it through the fingers and seek for a piece with a sufficient mesentery—naturally this can be done only when the seat of

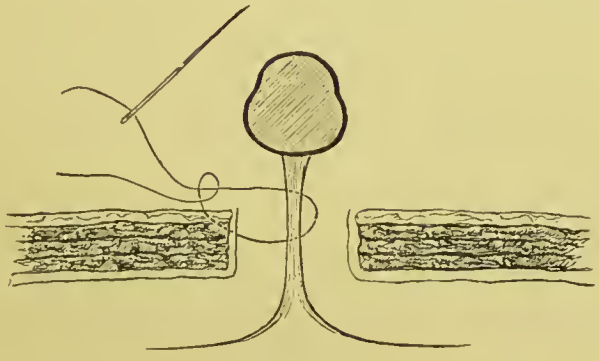

Fig. 11.

the disease is in the rectum or the lower part of the sigmoid flexure. Generally the part of the sigmoid first pulled up has quite sufficient mesentery.

A good knuckle of gut being pulled through the wound with the finger and thumb, the mesentery is made out behind the intestine. A needle, threaded with carbolized silk, is next passed through the skin on the outer edge of the

abdominal opening, then through the mesentery behind the bowel, back again through the mesentery, and is then tied to the end which had previously gone through the skin (see Fig. 11). When the suture is tightened, it keeps the peritoneum of the mesentery against the parietal peritoneum. This is the safest and quickest of the many ways suggested for fixing the mesentery, and is as efficient as any of them. The hare-lip pin, the use of which has been proposed, is clumsy and unnecessary; further, if it has to be removed the mesentery may drop back. Next I secure the prominent piece of gut to the edges of the wound. In several places around I fix the gut to the skin by passing the needle very carefully, so as not to prick the mucous coat, the sutures being passed only through the muscular and serous coats. If possible I choose a longitudinal band to put the needle through, for that part of the intestine is tough and thicker. I pass one suture at the upper and one at the lower angle of the wound, and another on the opposite side to the mesenteric stitch, and put in more if I find that there is too great a gap between the bowel and the skin edge in other parts. The more distended the belly is, the more of these sutures are required in order to prevent the small intestines or the

omentum from being forced out between the large intestine and the skin wound.

By this method I have often performed the operation in fifteen minutes. When the operation is finished, the appearance of the gut is as shown in Fig. 12.

The gut is then covered over by some green protective, antiseptic dressings are applied,

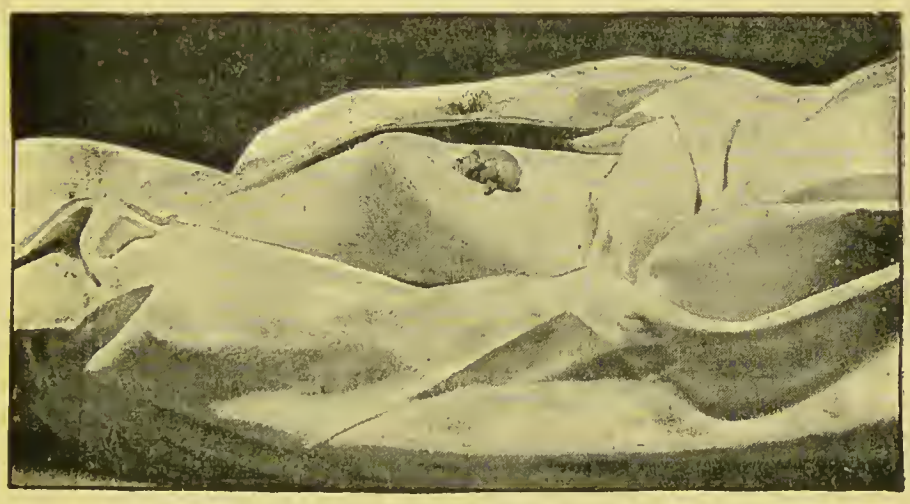

Fig. 12.

pads are placed over the opening to prevent any vomiting from causing the gut to break away from the suture, and the whole is held by an ovariotomy bandage.

The next day, or even after six hours, if there is great distension or much pain, the gut, which by that time is thoroughly glued up to the abdominal opening, may be opened, and wind or

fæces be allowed to pass out. If the condition of the patient is satisfactory the gut may be left alone for three or four days. To open the gut I use scissors, cutting the intestine from above downwards to the extent of about $1\frac{1}{2}$ inches.

There is generally a large quantity of gut, or rather walls of gut, on both sides of the incision. It is now my practice to cut this away till the edge of the gut is nearly on a level with the skin (see Fig. 13); the portion above the dotted

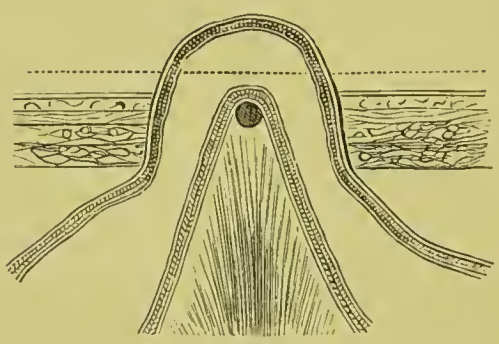

Fig. 13.

line is removed. Unless this is done there is too great a prominence, for though the walls shrink to a certain extent they do not contract sufficiently. There is little bleeding, and no pain is caused when the gut is opened or cut away. If there is a good spur a double-barrelled opening is now seen (Figs. 14 and 15).

The essential point of my operation is to make a good spur so as to prevent fæces passing below the artificial opening. Here is the method in brief:

To procure a spur means to fix up the gut, by the mesenteric stitch, in such a manner that no fæces can possibly pass from the upper part of

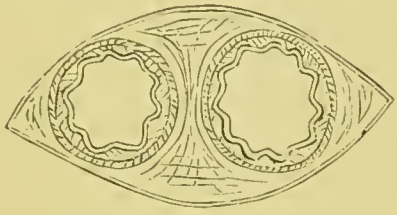

Fig. 14.

the intestines beyond the inguinal opening into the portion of the gut below the opening ; such

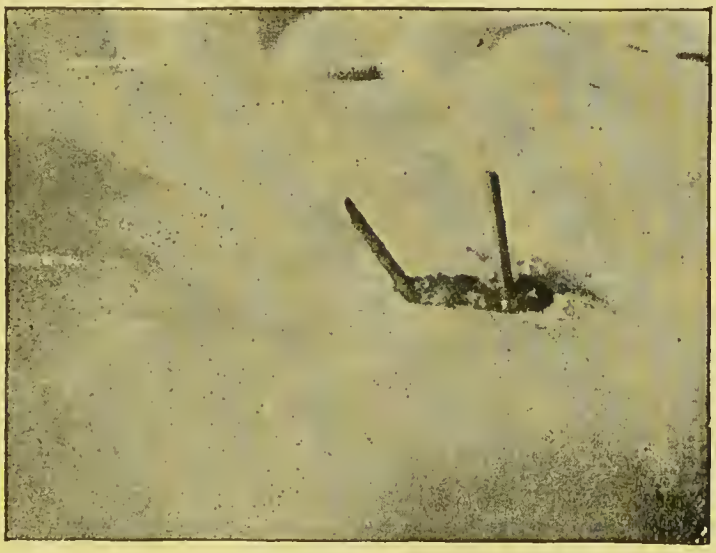

Fig. 15.—Shows the double-barrelled opening with directors passed into each orifice.

passage of fæces will only further irritate the malignant growth or stricture with ulceration.

Unless such a spur has been obtained, I consider the operation to have been a failure. This

is particularly the case at the present time, when inguinal colotomy is done much earlier than formerly, and when one of the main objects of the operation is to relieve or allay this very irritation. If, through the neglect to make a spur, this irritation is maintained, or even aggravated, and the concomitant diarrhœa and pain are not stopped, we shall merely have added to the patient's discomfort; for he will have a fæcal fistula in the groin, instead of a complete and perfect artificial anus, intended to relieve the irritation of the rectum below the opening.

Case IV.*—T. J., aged 59, married, healthy-looking man, had suffered from piles for eighteen months, from which he dated the commencement of his illness. The last few months had lost flesh rapidly, and complained of great difficulty in getting the bowels to act; passed mucus; frequent diarrhœa, with the passage of flattened, ill-formed motions. On examination, a hard rugged growth could be felt high up in the bowel, only just within the reach of the finger; this surrounded the gut, and was firmly fixed; abdomen distended. April 22nd: I opened the sigmoid in the groin, as described; found the gut easily. April 25th: I opened the gut and removed the walls; the spur was well-formed and prominent. April 26th: A purgative was given, but did not act, and on introducing my finger into the upper orifice, I found a hard piece of motion blocking the passage; this I broke down, and then the bowels acted very well; after this he rapidly got well. The motion accumulated in the lower part of the gut passed chiefly upwards, but some was passed by the anus. April 28th: All the sutures had

* The number affixed to each case corresponds with that in the table given later on.

been removed, and the wound was dressed with zinc ointment, for a small part had broken down at the upper part. May 6th: Returned to his home, the wound nearly healed, and the case, to my idea, perfect. June 16th: As the patient had some difficulty in getting the bowels to act, I saw him again. He had gained flesh, and no fæces passed below the spur. The rectum was completely blocked up. On examining the upper orifice, I discovered a polypus with a pedicle 4 inches long; this I ligated and removed, and after that the bowels acted well.

Case VI.—F. C., aged 45. About twelve months before he began to complain of pain and discomfort in the lower part of his pelvis and rectum. He rapidly lost flesh, and was constantly troubled with diarrhœa, accompanied with losses of blood and mucus by the rectum. An examination was made several times, but nothing could be felt in the bowel. When I saw him he had a very malignant aspect, was greatly emaciated, and complained of very severe pain in the rectum, sacral region, and down the legs. There was an offensive discharge from the bowel and persistent diarrhœa. On examination by the rectum, a hard mass could, with great difficulty, be felt high up in the pelvis; but as it was impossible to make out the nature of the tumour on account of the pain occasioned by the exploration, ether was given, and the sphincter dilated; then, with the hand pushed deeply between the buttocks, the hard tumour was found to be epithelial cancer, involving the entire gut, the greater mass being situated in the anterior wall, and the tip of the finger could just feel a hard crater-like opening in the upper part of the growth into which the fæces passed. As he suffered severe pain, and was greatly worried by the diarrhœa, I thought inguinal colotomy might relieve him, especially as he was getting bladder troubles. When the operation was proposed to him, he readily accepted any chance that might relieve him of his sufferings. Accordingly, on July 14th, I performed inguinal colotomy, following out all the details I think necessary. The gut was easily found by tracing it down from the colon, and stitched to the wound; that night the temperature rose to 100°, but he slept well, only occasionally complaining of tightness

about the abdomen. No vomiting; tongue moist; pulse 96; no tenderness or distension of the belly. July 15th: Had a good night, after an injection of morphine. Took liquid food well. As the abdomen was distended and the tightness still complained of, I removed the dressings, and opened the intestine (thirty-six hours after operation), cutting away the walls on a level with the wound. Spur complete and well formed. Much wind passed, affording great relief. Temperature 99°, pulse 88. July 16th: Much more comfortable, but still had pain in the back. The bowels had not acted by the artificial anus; the intestine wall glued by lymph to the parts around. July 17th: Bowels acted with no pain. July 19th: Much pain in passing water; evidently the growth had extended into the bladder, for he passed blood and some shreds of tissue. Some pain in the bladder after passing water; gained flesh. August 6th: Went home, relieved of the severe pain he suffered prior to the operation.

Case XIV.—W. M., aged 31, was admitted into St. Mark's Hospital on December 17th, 1888. For more than a year he had had difficulty in passing motions; this was at first attributed to simple stricture. There was also increased frequency of, and difficulty in, micturition. Though he lost considerable flesh and his strength was generally failing, he was able to continue his duties till two months before admission.

The bowel was now almost entirely blocked, and only liquid fæces were passed, and those in small quantities. He now sought special advice in a large town in the neighbourhood. He was pronounced to be suffering from malignant disease of the rectum and bladder; but no active measures were proposed.

By this time he was in a very wretched condition. For three weeks he had practically passed nothing per rectum, his abdomen growing more and more distended, though he occasionally obtained slight relief from vomiting.

When he arrived at St. Mark's on December 17th, he was extremely emaciated.

The abdomen was much distended. On examination per rectum, the finger came immediately upon the bladder, which

apparently occupied nearly the whole pelvis, and rendered the lower part of the rectum almost horizontal. The lower part of the bladder was extremely hard; high up in the rectum carcinomatous nodules were with difficulty felt.

His condition was explained to him, and inguinal colotomy was advised. This he consented to undergo.

The large intestine was found, and was drawn through the opening and secured to the abdominal wall. A small aperture was made in the gut, and the tension was lessened by the escape of a quantity of wind and a small amount of fæces, none of which reached the colotomy wound. The hole in the gut was closed by pressure forceps.

The next day, the 18th, the patient was doing well. He appeared to have been much relieved; his appetite was improving, and his pulse was good.

The opening in the gut was enlarged, but no bowel was removed.

On the 22nd his appetite was poor. He was somewhat restless and evidently failing. His pulse was weaker and quicker, and his tongue furred. There was a copious discharge of mucus from the bowel through the wound. The urine, when drawn off through the catheter, was tinged with obviously vesical blood.

For the next four days, though he had no pain, he was clearly losing ground. There was no special indication of anything except that the urine was quite dark, and constantly and freely passed, always loaded with blood.

On the 28th he complained of intolerable weakness. At midnight he lost all interest in his surroundings. His pulse was 150, small, and hardly perceptible at the wrist. At 12.45 a.m., on the 29th, he died.

The post-mortem examination showed there was a cancerous deposit round the sigmoid flexure, which extended to the neck of the bladder and caused almost complete obstruction of the gut. The bladder was much dilated and hypertrophied. The mucous membrane was much engorged, and was involved in cancer in places.

Case XXXI.—Mary G., aged 41, was admitted into

St. Mark's towards the end of June, 1890. She had had nine children, six of whom were were still living and healthy, whilst three had died young. Eighteen months before admission she had a miscarriage, followed by pain in the back. This grew worse, and ten months after that she had bleeding from the rectum. She consulted a doctor, who gave her medicine, but made no rectal examination.

The patient had lost a large quantity of blood at stool, and was troubled by a slimy discharge. She had severe pain in the back, and had lost much flesh. Until a few days before admission the bowels had been very relaxed.

There was a hard growth too far up the rectum to allow of excision, and nearly blocking the entire rectum. On June 30th, inguinal colotomy was performed in the ordinary way. The next day the gut was opened, and the bowels acted freely. On the fifth day the walls of the gut were cut off on a level with the skin. Satisfactory progress was made. The bowels acted from the upper opening, the lower aperture being almost completely closed, and only admitting a probe. There was a good spur.

On July 31st the patient was discharged.

Case XXXVIII.—C., Mr., aged 50, was seen by me on October 5th, 1890. About eighteen months previously he began to suffer from rectal trouble. He was treated for some time for dysentery and piles, and then was discovered by Dr. Allen to have a malignant disease of the rectum. When I saw him he was a very pale sallow man, emaciated, suffered much on and after the action of the bowels, going constantly to stool without much relief, and frequently passed blood and mucus. On examination there could be felt a large mass surrounding the rectum, too extensive and fixed to be removed, so advised colotomy. Inguinal colotomy was performed; the mesentery was long, and a good spur formed.

The next day, as the patient was distended and troubled by wind, I just opened the gut, and much flatus escaped. Two days after the patient was purged. As all was very quiet, and the patient wanted well purging, I did not remove the excessive gut until nine days after the operation. Ether was given, the gut was cut away; several vessels

wanted securing. The stitches were removed a few days later, and in fourteen days he left town quite well. There was no prolapse; he had entirely lost all his pain, and even had gained flesh. Bowels acted freely from the upper of the two openings.

Case XXXIX.—P——, Mr., aged 70, October 30th, 1890. I had seen the patient a year previous to the operation, when he said he had had rectal trouble for three years. He looked fairly well, but had lost flesh. On examination I found a cancerous mass situated at the posterior aspect of the rectum, too high to remove, causing no obstruction, not much pain, only constant desire to go to stool. I ordered him opium injections, etc., to allay the trouble, and for eight months he went on very fairly well; but for the last four months the desire frequently to go to stool greatly increased. There was constant straining. The growth not unfrequently bled, and there was pain for some hours of the day. All these things greatly worried him, so I proposed inguinal colotomy to him, which he most readily agreed to.

Accordingly, October 30th, I performed left inguinal colotomy, as already described. There were no special difficulties; the mesentery was fairly long, and the gut soon found. I made a good spur, but did not pull much of the gut out. The history of the after-treatment is as follows:

The gut was opened on the third day, and a few days later some of the skin stitches suppurated, and a small abscess formed near the wound. I was very anxious about him, on account of his age, but on removing the sutures some pus was discharged, and a small slough in a few days came away. I did not in this case remove the overhanging gut, on account of his age and the delicate condition of the tissues—that is to say, their low vitality and liability to inflame. The overhanging pieces of gut greatly shrivelled up, but I must admit left rather an awkward lump, not so good a condition as when they are removed. The bowels acted from the upper end. There was a fair spur. No prolapse; but as I have said before, as the overhanging gut was not removed, the opening appeared more prominent than usual.

The patient lost all his pain, and improved in spirits and in general health. He took about six weeks to get well.

Case XL.—T., Mr., aged 53; weighed, when well, 14 stone; October 25th, 1890, when I saw him, was reduced to 10 stone. Had the following history: About two years before began to suffer with rectal trouble, occasional bleeding from the bowel, and frequent, but not sufficiently copious, stools. For the last six months had very great difficulty to get the bowels to act; when they did, he only found tape-like motions, and slimy and blood-stained discharge. His aspect was ashy, and he suffered considerable griping pain in the abdomen, which was rather distended. On rectal examination could be felt a hard nodular mass in the bowel, completely narrowing the gut and at the same time prolapsing into the lower part of the rectum.

On the 25th October inguinal colotomy, performed in the same position and same way as I always do. The gut was soon found, fair mesentery, so could make a good spur. No complication in the operation. Two days later I opened the gut and ordered a purgative. Seven days later I cut off the superfluous gut; very little bleeding; no pain whatever. In a few days he got up, and in less than three weeks from operation returned home. The bowels acted from the upper opening. There was a good spur. No prolapse from upper or lower opening. The lower opening was contracting up rapidly; patient looked well; no pain; had put on flesh.

Case LII.—James G., aged 61, was admitted into St. Mark's Hospital on July 11th, 1891.

During the last three months patient had suffered very much from weakness and pain in anal region; this came on worse when he went to stool, but was also constantly present, more or less. Patient had lost control to a considerable extent, and could not pass water without at the same time passing a motion. Bowels had been opened on an average seven or eight times daily. Patient had lost flesh.

On July 13th I performed left inguinal colotomy. No difficulty was experienced, though the mesentery was short. Suture passed under the gut.

The next day the gut was opened.

July 16th: Some dyspnœa and wheezing noticed. Face slightly cyanosed. Patient propped up in bed and given strong beef-tea every two hours, and 4 oz. of brandy. July 17th: Patient much better. Tongue moist. Slept at intervals during the night. Pulse regular and less frequent than yesterday. The cyanotic appearance had cleared away. Cough rather frequent. July 21st: Very good spur formed, and bowel discharging from the upper opening. July 28th: I removed with scissors that part of the bowel which protruded too prominently from the wound.

August 8th: Patient much relieved by the operation. Discharged, owing to hospital cleaning, to be readmitted for excision of the rectum. But he was so comfortable from the colotomy that he did not wish to have the growth excised, although that was possible.

Case LIV.—R., Mr. J. In the early part of 1890, Mr. R. consulted me for cancer of the rectum, involving the entire circumference for about 4 inches from the anus upwards. A healthy gut could be easily felt above the growth. I excised the rectum. For some months all went well; but at the beginning of 1891 I found the rectum had begun to contract, so that I advised the daily passage of the finger, which corrected the contraction for some time. However, after a while the rectum contracted still more, and from several small places blood began to issue, and there were symptoms of recurrence of the growth.

In the early part of September I saw him again, and it was then quite obvious that the growth had recurred in the rectum, which was so blocked up that the finger could not be passed beyond the growth and stricture. Accordingly, on September 19th, 1891, I did left inguinal colotomy in the usual way. There being a medium mesentery, I was able to make a good spur. The gut was opened on the second day; the superfluous walls of the gut were removed in the usual way. About a fortnight later he developed erysipelas, and was very ill for a week. However, he recovered, and returned home five weeks after the operation, being much relieved from the rectal pains, diarrhœa, and bleeding. The bowels acting from the upper of the two openings; good spur; no prolapse.

Case LV.—Father A., aged 25, came to the Great Northern Hospital on September 21st, 1891. For the four last years had had great pain about the sacrum and great constipation. About twelve months before noticed a slimy discharge from the bowel, and the constipation turned to incessant diarrhœa mixed with blood and slime. Of late had rapidly lost flesh. On admission, emaciated, unhealthy-looking man. In the rectum could be felt a large irregular mass, about 4 inches up, situated and fixed dorsally, as if growing from the sacrum. The opening would not admit the finger, and the upper limits of the growth could not be felt. He complained of constantly wanting to go to stool, and passing slime and blood, sometimes slightly mixed with mucus. As excision was out of the question, I did inguinal colotomy in my usual manner. The mesentery was short, and only a small loop of intestine could be drawn out.

The patient did very well, the temperature remaining nearly normal. No distension of the abdomen. On the third day I opened the gut, and the next morning a purgative was given, and the bowels acted freely. About a week afterwards I cut away the overhanging edges of gut on a level with the skin. No pain, and only a few vessels required securing.

On 21st October he left the hospital; was much stronger, and had gained in weight and looked better in aspect. Bowels acted only by the inguinal opening, none passing to rectum, and he had entirely lost the distressing diarrhœa and much also of his rectal pain.

Case LVII.—C., Mrs., aged 73, had the following history: for about six months had been troubled with frequent diarrhœa, having to get up many times at night; only passing blood and mucus, and at times getting obstruction lasting for a week. On examination, I found a large mass of cancer about 5 inches up the bowel which bled on the slightest touch; could not pass finger through the mass, which had also greatly involved the vagina, causing considerable pain.

On October 21st inguinal colotomy was performed in the usual way. The gut was opened on the next day, and a quantity of flatus passed. On the fifth day the gut was

more freely opened, and some of the prominent walls removed. As the patient was old, I must admit I did not remove much of the overhanging walls, for fear of too severe hæmorrhage.

After the operation she rapidly improved in health, put on flesh, and was entirely relieved of the distressing diarrhœa and bleeding; and the bowels acted freely from the inguinal opening without pain, a quantity of old and hard fæces being evacuated.

In three weeks' time she was quite well, there being a good spur, no fæces passing by rectum, no prolapse; but, to my mind, the opening was a little too prominent, no doubt due to the fact that I had not removed all the walls of the gut.

CHAPTER V.

THE SUPPLEMENTARY OPERATION.

After I had performed eighteen cases of inguinal colotomy, I became able to observe the various points of the operation. I found that there was one condition in which operating in the iliac region might be disadvantageous, not to say distressful, in its results. In more than six out of the cases I noticed that, after the patients had got up and had been able to go about, they suffered from a large procidentia of the gut through the inguinal opening. This naturally occasions great discomfort, and necessitates the use of a strong truss to retain the intestine in its place, and whenever the bowels act this procidentia occurs. For a long time I pondered over the possible causes of this procidentia, and could not easily arrive at a satisfactory solution.

My first theory was that an excessive largeness of the incision in the abdominal wall had brought about this unlooked-for and altogether

undesirable effect. In some of my cases, therefore, I limited the incision in the abdominal wall to a length less than two inches, and found some variability in the results. In one or two cases the procidentia was partially obviated, in others it was as bad as ever. I had, then, to come to the conclusion that my theory had been erroneous, and that an increase or a decrease in

Fig. 16.

the size of the incision could neither cause nor impede this protrusion of the gut. After thinking over the matter it occurred to me that the procidentia might have some relation to the length of the sigmoid mesentery, which is sometimes of considerable dimensions, measuring at least 4 inches from the intestine to its attachment to the ilium. It may be seen from the accompanying Fig. 16, that if the intestine be

pulled out only to a limited extent so as to make a spur, but the mesentery at *a* and *b* be long, whenever the bowels act the lengthy mesentery will easily allow the gut to protrude. The resulting state will be that shown in Fig. 17, that is to say, the intestine will be proeidented until the mesentery at *a* and *b* has become taut.

I now perceived what ought to be done in such eases. After I have performed the first part of

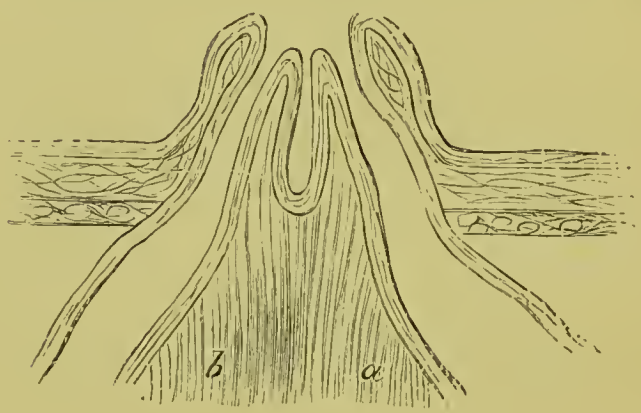

Fig. 17.

the operation in the usual way by making an ineision two inehes in length, one ineh internal to the anterior superior spine of the ilium, the parietal peritoneum being stitched to the skin, I pull out the gut by its lower end till no more ean be made to protrude, and do the same to the upper end. The mesentery is now quite taut, and a large buneh of intestine, several inehes in length, has been drawn through the opening, and is allowed to rest upon the abdomen. This is

represented in Figs. 18 and 19. I then pass sutures through the mesentery, and several through the muscular and serous coats of the

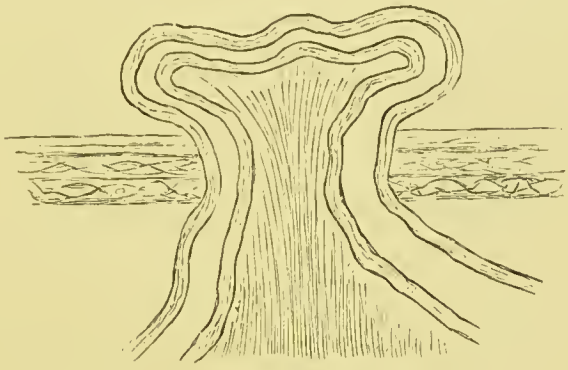

Fig. 18.

bowel, so as to prevent it slipping back. The mesentery being perfectly taut, no procidentia is now possible.

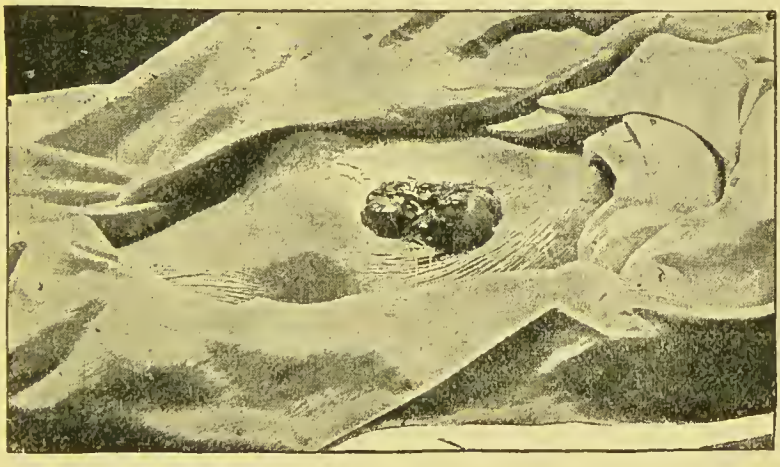

Fig. 19.

In two or three days after this first operation the gut is opened so as to allow of the exit of wind, and in a week or so all the gut outside

the belly is removed. First of all I apply a clamp about a quarter of an inch from the wound, and screw it up tightly. The clamp should be provided with spikes, as shown in Fig. 20, and in

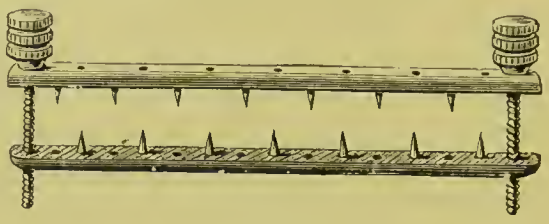

Fig. 20.

any case should have a firm and good grip. Unless this is seen to, when the intestine is cut off the clamp will slip off the stump, and serious hæmorrhage will ensue. My cases testify to the great

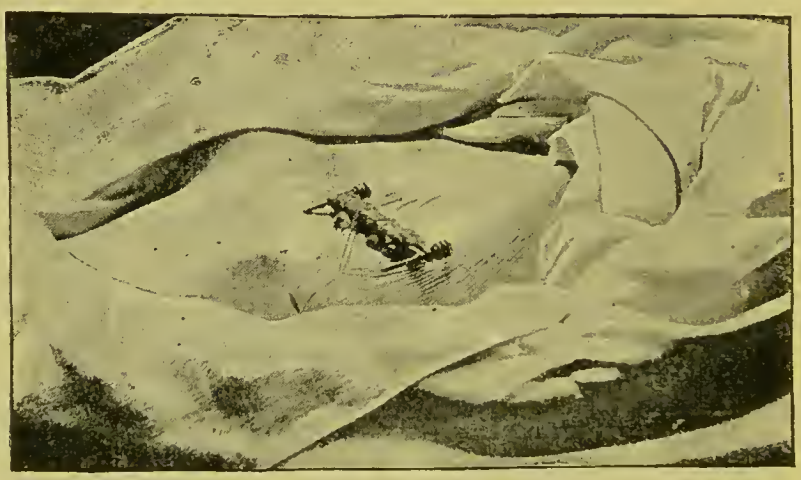

Fig. 21.

importance of this provision. I then cut off all the portions of gut above the clamp, Fig. 21, allowing the latter to remain firmly fixed for twenty-four hours—indeed, so long as any slackening of it

causes bleeding. When it is taken off, no bleeding then occurs. The amounts of intestine I removed in my cases measure from 4 to 12 inches, and weigh from 3 to 7 oz.

During the progress of one case I had the opportunity, thanks to the kindness of Mr. G. R. Turner, of St. George's Hospital, of seeing a post-mortem examination on a subject on whom he had performed inguinal colotomy. The patient had been operated on soon after the publication of my first paper on inguinal colotomy, and had lived for many months. There was no procidentia through the inguinal opening, and I was able to discover the reason for this. The sigmoid had no mesentery, or, at any rate, an extremely short one; and the intestine was found to be resting close upon the iliacus muscle, and was not movable in the belly. The operation had been a complete success, a perfect spur having been obtained, and there being no protrusion. Thus my theory as to the etiology of procidentia following upon inguinal colotomy was satisfactorily confirmed.

I must confess that this supplementary procedure of cutting away so large a quantity of the gut has somewhat increased the seriousness of the operation. Nevertheless, the exceeding discomfort occasioned by this possible procidentia

necessitates a fair grappling with the circumstances.

The fact remains that if the original operation has succeeded, and the patient's life is likely to be prolonged for some considerable time, the descent of the intestine from the inguinal opening must be prevented. It should be remembered that the presence of a slack and lengthy mesentery is the *sine quâ non* of this supplementary procedure. If this long mesentery does exist, and no steps be taken to stay this procidentia, patients who have been operated on for innocent stricture with ulceration of the rectum, probably combined with recto-vaginal or recto-vesical fistulæ, will be in the following condition : they have submitted to a palliative operation which may have been entirely successful in its main object, the relief of obstruction of the rectum ; yet the resulting good has been accompanied by a resultant evil. Through the new opening in the groin the intestine protrudes, and it is a source of constant trouble and discomfort. Some patients have told me that had they been aware of this possible *sequela*, they would never have consented to undergo inguinal colotomy. Their life is simply spoilt, and they are practically prevented from going about and mixing with the world at large in consequence of the constant protrusion of the

mass. In cases of innocent stricture, where the patient is likely to have a considerable lease of life, I would strongly recommend the adoption of my supplementary procedure of entirely removing all of the intestine that can be drawn out of the inguinal opening.

On the other hand, in bad cases of malignant disease, when the patient is greatly exhausted, and has probably only a few months, or perhaps weeks, to live, I do not deem it wise to carry out any further operation. Be content with pulling the intestine well through the wound, and so make a good spur. If procidentia does ensue, it will not be of much moment, for the patient will be practically confined to the bed or sofa, and cannot lead that more or less active life in which his procidentia is so extremely discomforting.

Still, inasmuch as my clamp does away with any risk of hæmorrhage, I am not afraid to perform the supplementary operation in selected cases of cancer. I have altogether treated fifteen cases in this manner with perfect success as regards any after prolapse, and not one patient has died from it.

A few points in this operation require special mention :

1. Pain is experienced when cutting through

the mesentery, but none whatever when cutting through or into the intestine proper; it is therefore wise to administer ether when removing the protruding portion of intestine.

2. The clamp for holding the intestine must be spiked, and have a firm and certain grip. Unless these requisites are provided the clamp will slip and cause severe hæmorrhage. Moreover, the clamp should not be applied too close to the wound, but should be placed about a quarter of an inch distant. It should be kept on till no hæmorrhage follows on any loosening or unscrewing. In one case I used no clamp, and consequently there was considerable bleeding. In another case the clamp was not spiked, and therefore slipped; the hæmorrhage was exceedingly sharp, and caused me much trouble. In a third instance I removed the clamp a little too soon, and was obliged to clip two bleeding vessels. Unless all the above particulars with regard to the clamp be conscientiously attended to, the great probability of severe hæmorrhage will enormously increase the danger of this supplementary operation, and may, therefore, tend to militate against its adoption.

I shall first detail my early cases to show how I arrived at the importance of a good clamp. Therefore, the earlier ones are not to be taken as

typical examples of the way in which I now perform the supplementary operation.

Case IX.—Mrs. S., aged 40, came to me at the Great Northern Hospital with the following history: About twenty years before she had had syphilis, with a bad ulcerated throat; a few years later bowel troubles had commenced, with diarrhœa and the passing of blood. She was treated at the London Hospital, under the care of Mr. Jonathan Hutchinson, mercury being given and bougies being passed. She remained fairly well for some time, but at length her bowel troubles recurred, and she entered the Soho Hospital for Women, being placed under the charge of Mr. Reeves. Here a similar line of treatment was pursued to that previously used at the London Hospital, but only slight benefit was afforded.

When I first saw her in May, 1888, she was suffering from a bad stricture of the rectum 4 inches up, through which I could not pass the finger. There was also extensive ulceration of the rectum, with a large recto-vaginal fistula. The bowels had not acted for six days, and the abdomen was rather distended. I suggested inguinal colotomy, and to this she consented. Accordingly, on May 6th, she was operated on (Mr. Le Gros Clark being present), her temperature at the time being 104° Fahr., but her state was so serious that I thought it inadvisable to permit any delay. I first made the inguinal incision in the usual way, stitching the parietal peritoneum to the skin, and upon the belly being opened, about 2 quarts of ascitic fluid were discharged. I then sought for the sigmoid, and upon pulling it out from the abdomen found it to be acutely inflamed. I determined that if the mesentery were long I would prevent any procidentia by the method above described. The mesentery was lengthy, and I duly performed my operation of pulling it out and tying up the intestine. That night the temperature fell to the normal, but as it rose slightly the next day, I thought it wise to remove the outlying gut. This I did on May 7th, twelve hours after the previous operation, the amount of intestine

cut away weighing 3½ oz. As I did not use the clamp, the hæmorrhage was profuse, and the vessels required many clips. The patient was rather faint, but soon rallied.

May 15th: All stitches removed except the deep one.

June 6th: Doing very well, wound healing, was dressed with red wash. Bowel syringed daily through lower opening. June 9th: Ulceration less, but stricture would not admit tip of finger. Abdominal wound fast healing. June 13th: Left the hospital. Bowels acted well through inguinal opening, far less discharge, wound quite healed. Patient had good appetite, and felt much stronger. There was no discharge. October 20th: Saw the patient again nearly six months after the operation. There was no procidentia whatever, but, as a little piece of mucous membrane was pressed upon by the truss, I advised her to come into the hospital, and have it removed. This she did. October 25th: I ligatured the protruding membrane, but I regret to say she died suddenly of peritonitis a few days later. I was unable to obtain a post-mortem examination.

Case X.—Mr. B., aged 54, came to me in May, 1888, complaining of the usual symptoms of malignant disease of the rectum. On examination I found a large crater-like mass nearly filling up the rectum, and involving the prostate. He suffered great pain, and was constantly going to stool, losing a great deal of blood and mucus. I advised him to undergo inguinal colotomy, which was therefore performed.

June 14th: The incision was made in the ordinary manner, and the gut drawn forth. I speedily discovered that there was a very long mesentery, and accordingly pulled out the large intestine until no more would come out from the belly. This mass of gut measured 7 inches, and was allowed to rest on the abdomen, the mesentery being fixed in position to the side of the wound by silk stitches, and a few were passed from the skin into the muscular and serous coats of the bowel, to keep the intestine drawn out to its full extent. That same evening there was little pain, no sickness, and no distension of the abdomen. Temperature 99°, pulse quiet, tongue clean and moist.

June 16th: Had a better night, temperature being

normal. He had no pain, but felt rather distended, pulse quiet, and tongue fairly clean, but he had vomited twice. I removed the dressings, and made an incision into the gut, so as to relieve the distension; a good deal of wind was emitted. Hot fomentations were placed on the abdomen.

June 17th: On this day I cut off all the gut. I used the clamp described above, but it was not provided with spikes; consequently, when it was put on the bowel and a cut made above it, the clamp loosened its grip and slipped. Very free hæmorrhage ensued from the large mesenteric arteries, which had been divided. These I clipped with considerable difficulty, and was seriously troubled by the profuseness of the bleeding. It was after this that I determined in the future to use a spiked clamp. The amount of gut that I cut off consisted of an entire piece of large intestine 7 inches in length and 4 oz. in weight.

June 18th: Patient fairly well, but evidently much exhausted from the previous day's very sharp hæmorrhage. He had pain in the abdomen of a colicky nature, to remedy which I gave him a purgative.

June 22nd: Had a copious evacuation of solid matter, and consequently felt much relieved. He complained, however, of bladder troubles, for which he saw Mr. Buxton Browne.

June 25th: Wound was dressed with zinc ointment. Patient was doing well, temperature being low, tongue better, and pulse quiet.

In a week or so he returned home. There was some contraction about the wound, into which the finger had to be passed daily. There was no procidentia, either on standing or on the action of the bowels. The colotomy had resulted in a satisfactory issue, and had given great relief. Had not the sharp hæmorrhage taken place he would have recovered strength earlier than he did.

Case XI.—Miss J., aged 46, came to consult me during the summer of 1888, complaining of incessant teasing diarrhœa, of severe straining, and of never obtaining relief from the action of the bowels. She was of a sallow aspect, and had recently lost much flesh. On examination, I found a malignant tumour involving the whole circumference of

the rectum for about 4 inches up, and extending to the vagina. The rectum was nearly blocked up by the mass, which was hard and vascular, bleeding on the slightest touch.

On June 28th, inguinal colotomy was performed, all the above-described details being carefully carried out. There was a very slack mesentery, and as much as 9 inches of the large intestine were pulled out of the wound.

June 30th: Another good night. Temperature normal, pulse 100. I redressed the wound, and cut into the gut to let out wind. The wound was then redressed with salicylic wool.

July 1st: A bad night, much spasm, a great deal of wind passing out from the wound. Abdomen rather distended, but not tender. Temperature 99°. I put on the clamp, the screwing up of which caused pain, and cut off all the mass of gut above the clamp. The spikes insured a firm and tenacious grip. There was pain on cutting through the mesentery; the patient also complained of a 'dragging' pain, so I tried to remove the clamp, but I had to screw it tightly again to stop hæmorrhage. The clamp was removed in eight hours. The amount of intestine which I cut off weighed 6 oz.

July 3rd: The bowels having acted freely, the patient was much relieved. The wound was very quiet, and some of the sutures were removed.

July 14th: No procidentia; the edges of the wound were granulating. No pain, good appetite, and ability to sleep. Temperature normal.

July 26th: She went to Folkestone, and was there under the care of Mr. Gerald Fitzgerald. She had gained flesh, and was much better in every respect. However, as she still experienced pain in the rectum, I ordered a suppository of belladonna, cocaine, morphine, glycerine, and gelatine, and advised the daily syringing of the rectum with warm water.

October 20th: I saw her again; the inguinal opening having contracted, I had to slit it upward a little. She went out daily, had gained flesh, and had suffered from no procidentia. The growth, however, caused much pain, had largely

involved the vagina, and practically occluded the rectum. Patient died in March of 1889, having lived ten months since the operation. Up to her death there had never been any procidentia.

Case XII.—K. J., aged 37, was admitted into St. Mark's, at the beginning of December, 1888, suffering from stricture and ulceration. She had been married for fifteen years, had borne no children, but had had a miscarriage seven years before. For thirteen years past she had suffered from a discharge from the rectum, and had much difficulty in obtaining relief for her bowels. Six years previously, after having consulted several physicians, she had entered the Soho Hospital for Women, where she fancied that the stricture, the cause of her trouble, had been divided and stretched.

Since then she had been in the habit of using bougies, and for a time was fairly well; but lately she could with difficulty pass the bougies, because of the pain caused by the ulceration. Moreover, she had suffered severely from constipation, and had passed little or no motion for three months prior to her entering the hospital.

The rectum was much ulcerated, the anus was fissured, and in addition there were several fistulæ. What with pain, inability to obtain evacuation, and the constant discharge, the patient's life was intolerably wretched. She had lost much muscular power and a considerable amount of flesh; she had little appetite, slept badly, and was troubled and weakened by exhausting night-sweats.

On December 3rd she was anæsthetized, and I made a thorough examination, discovering a tight stricture, about 3 inches above the anus, which was 3 inches in length, very firm, altogether unyielding, and badly ulcerated.

I performed inguinal colotomy on December 10th.

The usual incision having been made, as much of the large intestine as possible was drawn forth from the opening till the mesentery was rendered quite tense; a suture was then passed through the abdominal wall, and the mesentery and the bowel secured by six more. The time occupied was twenty minutes.

December 13th: On this day I applied my spiked clamp,

and removed the superfluous intestine. The clamp effectually controlled all hæmorrhage, and gave little pain till the afternoon; a small injection of morphine was then administered. At midnight I had to remove the clamp, but as there appeared to be a likelihood of some bleeding, I retightened it. A sleeping-draught afforded the patient a comfortable night.

December 14th: I removed the clamp; one vessel bled slightly. After a time the patient complained of nausea and flatulence. Vomiting then supervened. On examining the wound I found that the margins of the gut were adherent and rendered the bowel impervious. This was opened up, and a quantity of wind and fæces escaped. The patient was then easier and ceased to vomit.

December 20th to 26th: The patient was doing well generally. The remaining stitches were removed; there was a considerable discharge of laudable pus from the edges of the wound.

January 7th: The patient was discharged.

After the operation the condition of the rectum and anus steadily improved; the fistulæ, which previously discharged freely, immediately began to close, the fissure rapidly healed, and the ulceration quieted down so well that the patient felt little pain. At times, however, when the bowel was acting strongly under the influence of a purgative, shooting and cramp-like pains were felt in the rectum, probably indicating that peristalsis was going on in the lower bowel; there was also a watery purulent discharge. At the time of her leaving the hospital, January 11th, the rectal fistulæ were closed. The patient was almost entirely free from pain, and there was scarcely any discharge from the rectum.

November, 1891: Patient perfectly well, gained flesh. There was a good spur, and no procidentia whatever.

Case XV.—Anne W., aged 28, was admitted into St. Mark's Hospital in July, 1889. She gave the following history: Five months after her marriage (which took place six years before admission) she had an abscess in the right labium, which had discharged ever since. About the same date she had observed that blood and mucus passed from

the bowel, and this condition had likewise continued. A year after marriage (*i.e.*, five years before admission), she noticed that motions came through the vagina, and that motions per rectum were growing smaller.

She had had no children and no miscarriages.

Just before and after defæcation she had pain in the vagina and in the rectum, which lasted about a quarter of an hour. Four months before admission to St. Mark's she had been operated upon for piles, but her condition had grown worse. An examination showed that she had a stricture 3 inches up the bowel, through which the tip of the finger could not pass. There was a recto-vaginal fistula. The perinæum and part of the rectal and vaginal wall were destroyed by ulceration. The patient also suffered from sore throat, and she had a rash on the right arm and hand, which was copper-coloured on the elbow. The palm of the hand was slightly mottled.

On July 8th inguinal colotomy was performed in the usual way. About 7 inches of large intestine were pulled through the incision, and the gut was secured.

On the 11th, as there was some discomfort from flatulence, a small opening was made in the bowel.

On the 18th, ten days after the original operation, the supplementary operation was performed under anæsthetics. The clamp was applied, and the superfluous bowel was removed.

On the 19th, twenty-four hours after its application, an attempt was made to remove the clamp; but as there was slight hæmorrhage, it was retightened and left on for another twenty-four hours.

From this time the patient progressed favourably, save for occasional attacks of apparently violent colic. The discharge from the rectum continued, and there was some pain at times.

On August 9th, not quite five weeks after the operation, the patient was discharged. Her general condition and her local state had both improved greatly.

Case XXIII.—Albert H., aged 27, a somewhat emaciated, delicate-looking man, was admitted into the Great Northern Hospital at the beginning of October, 1889. There was

cancer in the family, for he believed that that disease had proved fatal to an aunt, an uncle, and a cousin of his.

He had fairly good health till Christmas, 1888, when he had an attack of diarrhœa, together with difficulty in, and pain on, defæcation. He was treated for dysentery; but the diarrhœa and other symptoms continued to be very troublesome.

In April, 1889, he went to King's College Hospital, and was told that he had a growth in the bowel, and that colotomy was advisable.

He had never passed much blood; but for the last six months there had been a slimy mucous discharge. Since the beginning of his illness he had lost a stone in weight.

On examination per rectum, there was found to be, about 2 inches from the anus, a tight stricture, which did not admit the point of the finger. The edges were hard and everted, and there was considerable thickening around, especially in front.

On October 2nd inguinal colotomy was performed. The sigmoid flexure was brought into the abdominal wound, and 8 or 10 inches were drawn out. A good spur was obtained.

The patient passed a very fair night, save for occasional and transitory sharp pains in the abdomen. There was no vomiting or flatulence, and the abdomen was soft and not distended.

On the 4th the bowel, which was very full of flatus, and was œdematous, was opened, and much wind liberated.

On the 8th the protruded bowel was cut off, a clamp not being used. There was considerable hæmorrhage, and a number of vessels required ligaturing. The piece removed weighed 8¼ oz. In the night a good deal of flatus and a little fæces were passed from the wound.

Patient quite well as regards colotomy on November 17th. Alive over four months after the operation.

Case XLI.—Mary D., aged 36. Five years before patient first noticed a whitish discharge from the rectum, not especially on defæcation, but at other times, the discharge staining her linen. When present at stool, it preceded the

motion; and at times she had passed nothing but discharge. Following the discharge she had an aching pain running down the back of the right leg into the calf. Was laid up in bed two months at home, and then had an operation performed on the leg, and was in bed for ten months after. The bowels acted generally every other day, the motions at times being flattened, at others in small round lumps. She had also noticed that they had gradually been getting smaller. Sometimes there was severe pain on defæcation, causing her to vomit. Had been in the habit of passing bougies for herself once or twice a week. Four and a half years ago was in the Cardiff Infirmary, and was operated on by Dr. Sheen. Was in-patient for three weeks. On examining the right buttock, a scar was found 6 inches in length, at the upper extremity of which, close to the fold of the nates, was a sinus discharging thin pus.

The patient had great difficulty and straining at stool, and there was a large quantity of foul-smelling purulent discharge from both the rectum and vagina, there being a recto-vaginal fistula.

October 13th, 1890. The patient having first been placed under ether, and subsequently under chloroform, on account of cough produced by the ether, I performed inguinal colotomy on the left side in the usual way, and a loop of bowel was hooked up and brought out of the wound till the mesentery was taut. The omentum first presented and showed signs of old peritonitis.

October 16th: The gut was opened.

October 23rd: Spiked clamp was applied at 11 a.m., and the redundant gut cut off. Evening, temperature 99·6. Inj. morph. hypod. gr. $\frac{1}{6}$, 5 p.m. October 24th: Clamp removed, 11 a.m. Morning, temperature normal; evening, temperature 101·8.

November 15th: Patient got up. No prolapse from either opening. Bowels acted through the upper of the two openings; lower much diminished in size. November 21st: Discharged.

November, 1891: Gained flesh; very well. No prolapse.

Case XLIII.—Anne D., aged 24. Was in good health

up to five years before, when she became very constipated, and had intense pain on defæcation; this pain in the bowel continued for a year, when she began to lose blood at stool in large quantities. Three years later, began to have a pinkish, jelly-like discharge from the rectum. For the last year had been getting thinner, and the pain on defæcation, discharge, etc., had been worse. The bowels act very frequently—more than a dozen times a day.

November 24th, 1890. The patient being under the influence of ether, I did left inguinal colotomy in the usual way. A loop of gut, about a foot in length, was pulled out until the mesentery was taut, and secured to the skin on either side by half a dozen silk sutures, a deep silk suture being put through the mesentery behind the loop of bowel. The gut presented old inflammatory mischief and thickening in places, probably of a tubercular nature.

November 27th: Bowel opened.

December 15th: Patient under ether. I applied spiked clamp, and excised the redundant bowel.

December 17th: Clamp removed.

January 6th, 1891: A truss was fitted; was very comfortable. Had been getting up a little each day for the past week.

January 17th: Discharged. The bowels acted from the upper of the two openings. There was no prolapse of the mucous membrane from either orifice. The lower opening is half the size of upper. Discharge from rectum less; occasionally comes through lower opening. Patient feels much benefited by the operation.

Case XLVII.—Emily C., aged 30. When nine years old had discharge from the rectum and straining on defæcation. Did not have any medical advice until she was fourteen years old, when she was seen by Sir Andrew Clark, and advised to go to Mr. Curling.

Mr. Curling, on examining her, found she had stricture of the rectum, and dilated it by means of tents, ordering her to use bougies subsequently. This gave her great relief for some time; but the old symptoms gradually returned, and eleven years ago (æt. 19) she went again to Mr. Curling, and had the stricture dilated by tents a second time. She

came to St. Mark's as out-patient in 1885, and was in-patient, under my father, for two months, being operated on for fistula; the stricture was dilated by bougies.

Came again to St. Mark's in 1891, complaining that the bowels never acted without aperients; sensation of something still wanting to come away after they had acted; always had a muco-purulent discharge from the rectum, mixed with a little blood; great pain and tenesmus on defæcation. Bowels at times did not act for a fortnight

January 5th, 1891: The patient, being under chloroform, was examined by my colleagues and myself, and a very contracted stricture—the upper limit of which could not be reached—was found. I then proceeded to perform left inguinal colotomy in the usual way. There was no difficulty in pulling out a loop of bowel about 6 inches in length, the mesentery being long. A deep mesenteric silk suture was used.

January 8th: Gut opened.

January 19th: Chloroform given, spiked clamp applied, and gut excised. Did not suffer much pain.

January 21st: Clamp removed.

January 22nd: Abdomen distended with flatus. Bowels have not acted since the clamp was removed. Upper opening somewhat retracted.

January 23rd: Bowels acted freely after a powder, and the distension subsided.

February 7th: Fitted with truss. Had been getting up daily for a short time. There was some tendency to contraction of the upper opening; finger was passed daily.

February 14th: Discharged. The bowels acted through the upper of the two openings regularly every day. The lower opening had contracted to about half its original size. There was very little discharge from the rectum; had no pain or discomfort. There was no prolapse of the mucous membrane from either opening.

January, 1892: Has much improved in health since the operation, and the patient is very grateful for the relief afforded her by the operation, her life having been a perfect misery to her before.

Case LVI.—Esther S., aged 32, was admitted into the Great Northern Hospital on October 6th, 1891.

In November, 1888, she had been an in-patient in the hospital, when she was treated for stricture of the rectum by division and the regular use of bougies.

In October, 1890, an abscess formed in the sacral region and burst; since then there had been numerous abscesses in connection with the rectum. From April, 1891, she had been confined to her bed. Bougies gave too much pain to be used, and the bowels were moved only by means of medicine. Liquid fæces were discharged by sinuses around the anus. The patient could not sit, or lie upon her back, and had been gradually growing thinner. Further, she had cough, night-sweats, and hæmoptysis. She had had a bad miscarriage; but she had borne a healthy child since then. She had no other children or mishaps; and no specific history was obtainable. She was a delicate, anæmic woman, with a flushed face, and could not move about without assistance. Her chief trouble was pain in the sacral region and the back, and she had also incontinence of fæces. On admission, temperature was 100·2. The abdomen was flaccid and not distended. There was no tenderness and no lump to be felt; nor was there any visceral enlargement. The rectum was extremely narrowed by a very tight stricture, together with ulceration of the mucous membrane. The constriction began at the anal margin, and did not admit the passage of the finger; hence its extent could not be ascertained. In the ischio-rectal fossa were numerous fistulous openings, through which fæces escaped.

On October 7th ether was given, and left inguinal colotomy was performed with the usual incision. The sigmoid was drawn up into the wound, and about 5 inches of bowel were left outside the abdomen. The mesentery was first secured by a silk suture, and then four or five more sutures were used to attach the bowel to the skin.

October 10th: The bowel was snipped open by scissors and a vertical incision, $1\frac{1}{2}$ inches long, was made. There was no hæmorrhage. Flatus escaped freely when the gut was opened.

On the 12th the bowels were well opened after a purgative. Action was from the upper opening.

On the afternoon of the 14th, ether was given, and the supplementary operation was performed, the redundant gut being cut off, and the clamp being used. The clamp was easily applied, and the gut snipped off on a level with the skin. The portion of gut removed weighed 3 oz.

At 11 a.m. on the 15th, nineteen hours after application, the clamp was gently released at one end; there was some bleeding from the cut edges. The clamp was screwed up again. During the night there had been considerable pain in the wound of a sickening character, requiring injections of morphine.

At 6 p.m. on the 15th, twenty-six hours after application, the clamp was gently released, and there was now no hæmorrhage. The raw surface was covered with a blood-clot. There was no tendency of the bowel to drop back. During the night the patient was easy, and the bowels acted.

On the 21st the wound looked well. There was the double-barrelled appearance, with a good spur between the openings. The bowels acted on the average twice a day from the upper end; the lower opening was smaller and was gradually shrinking.

On the 29th she was up for most of the afternoon. She had gained in weight and looked much better. Temperature ranged within normal limits. There were no night-sweats. The bowels acted regularly and satisfactorily. The wound tended to contract; the finger could just be admitted with ease. The cough was better than it had been on admission.

November 30th: Patient had greatly gained in health; quite fat. Perfect double opening. No prolapse.

CHAPTER VI.

IMPORTANT POINTS IN THE OPERATION OF INGUINAL COLOTOMY.

I NOW discuss some important details with regard to the operation of inguinal colotomy.

The Length of the Mesentery.—For purposes of description and classification, I divide mesenteries, as I have before mentioned, into long, medium, and short. By long, I mean cases in which the mesentery connecting the sigmoid with the iliac fossa is at least 5 inches in length, or even more. In such cases there may be some difficulty in finding the gut from the inguinal opening, but I myself have never experienced any trouble. In twenty of my cases the mesentery was long.

By a medium mesentery I mean one the length of which is at least 2 or 3 inches, so that it is possible to pull the gut well out of the wound, and to make a good spur. There were twenty-nine of this class of mesentery.

By short, I designate cases in which there

is practically no mesentery at all, and it is, therefore, difficult to fix the gut to the skin. Of even more importance is the circumstance that there is no possibility whatever of passing a needle behind the gut and forming a good spur. Indeed, no spur can be made. Thus the patients are left in a miserable condition, for some of the fæces pass beyond the opening in the inguinal region towards the growth. There were eleven instances of a short mesentery.

Fig. 22.

The Spur.—The question of the spur has already been briefly mentioned, but the matter is so exceedingly important that I must be allowed to return to it, and to distinguish clearly between a fæcal fistula and an artificial anus.

A fæcal fistula is an opening into a piece of gut communicating with the surface of the body, from which fæces issue; but, at the same time, some of the fæces pass beyond the fistula into the distal portion of the gut (Fig. 22).

An artificial anus is an opening in which all

the fæces pass through the opening on the surface of the body, and none whatever pass into the distal portion of the gut (Fig. 23).

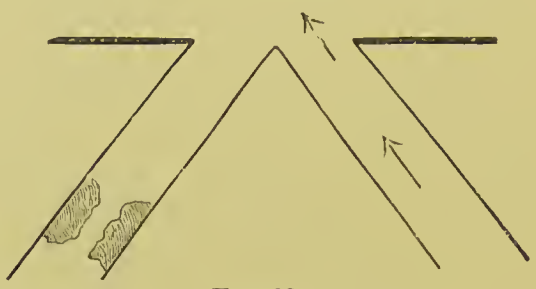

Fig. 23.

Now if inguinal colotomy is performed and no definite spur is made (Cripps, Fig. 24*), we have a condition of fæcal fistula, for fæces pass both by

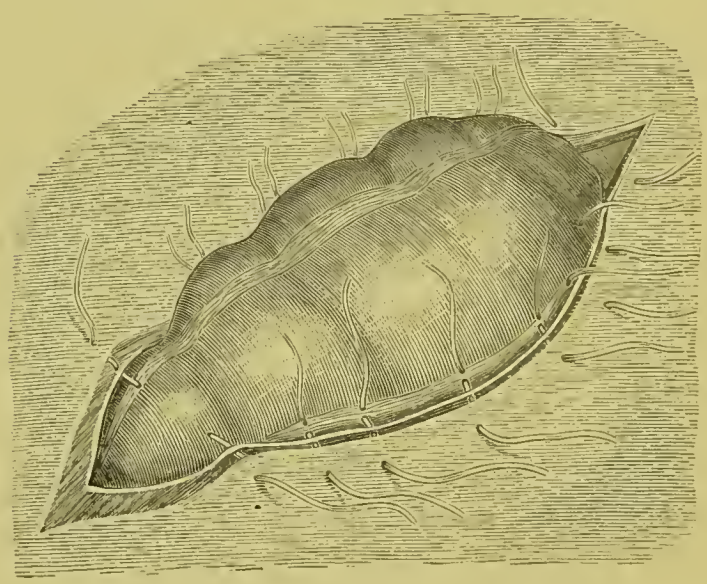

Fig. 24.

the inguinal opening and also into the distal portion of the gut. When, however, a spur is made

* Mr. Cripps has kindly allowed me to reproduce this figure from his paper on Inguinal Colotomy, published in the *Brit. Med. Jour.*, Oct. 6th, 1888.

(Fig. 25), fæces pass through the opening in the groin, and none can enter into the distal end of the intestine. Thus any fæcal irritation of the growth is entirely prevented.

I have tried to put the matter in a clear light, because some surgeons deny the necessity of making a definite spur, and therefore, in my opinion, their operations fail in an exceedingly important point.

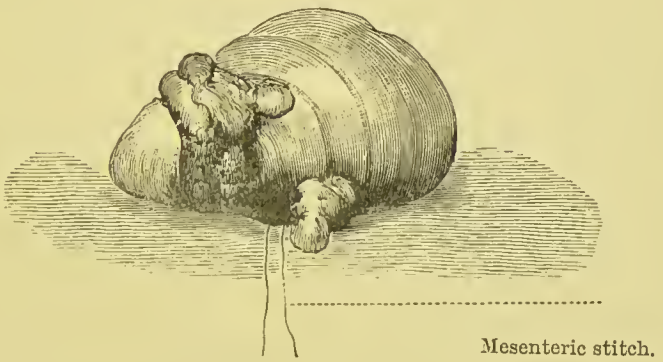

Fig. 25.

It will be observed that in ten out of my sixty cases no spur was formed. In my first three cases I had not come to appreciate the importance of the spur, and therefore did not attempt to make one—in fact, I did not use the mesenteric stitch.

Case I.—T. C. gave the following history: After the birth of a child, eleven years before, the perineum was ruptured; this was operated upon, but without success. Two years later she attended a hospital, suffering at that time with stricture of the rectum and recto-vaginal fistula. She had bougies passed, and the fistula operated upon; this was followed by pyæmia, and she remained in a very critical

condition for many months. In 1884, as she suffered so much discomfort from the rectal trouble, left lumbar colotomy was performed, and the next day it was found that the stomach had been inadvertently opened instead of the large intestine; the surgeon sewed up the opening, and the wound healed perfectly.

In the early part of 1886 I saw her, and found her in the following condition: In the rectum, about 4 inches up, was a hard cicatricial stricture, through which the tip of the index-finger would barely pass; there was also a recto-vaginal fistula, easily admitting two fingers; extensive retroversion and prolapse of the uterus; when the bowels acted, the whole uterus and bladder appeared outside. The left loin contained a large hernia, the stomach bulging into a weak part of the abdominal wall formed by the cicatrix. As the patient was in great misery, I determined to open the sigmoid flexure in the groin, for evidently the colon was not in the loin; moreover, a further search in that region was prevented by the herniated stomach. I therefore performed the operation already described, under antiseptic precautions, the operation in those days taking me fifty minutes. She improved steadily after the operation, the temperature on the first night being 99° Fahr., the next morning normal, and from that time remained absolutely normal. As there was no pain or abdominal discomfort, and as everything went well, I did not remove the dressings until two days after the operation, when I found the exposed piece of intestine covered with lymph; in fact, the lymph had found its way into the meshes of the gauze, and firmly fixed it to the gut; this had to be gently separated. As there was no abdominal discomfort, the dressings were again applied; but the following day, namely, three days after operation, the patient was uncomfortable, so I at once removed the dressings and opened the intestine. The intestine was firmly united by lymph to the skin. The next day the bowels acted well. In ten days all the exposed sutures had been removed, and the patient was up, with only a small granulating surface to heal. Sixteen days after the operation she went to the country wearing a truss. I saw her, Nov., 1891; she said she was very comfortable;

the bowels acted well by the artificial opening, but occasionally some motion passed below; she had entirely lost the straining pain and discomfort she formerly suffered from.

This case, to my mind, was not perfect, for motion occasionally passed across the imperfect spur to the lower part of the gut. This is explained in that I did not sufficiently recognise the importance of a well-marked spur, and in the operation did not introduce the sutures through the sigmoid meso-colon as I now do, nor was the bowel brought well out of the wound, and fixed there in order that it might adhere out of the opening in the abdominal wall.

Case II.—Mrs. A. H., aged 50, always had good health until fourteen months previous to my seeing her, when she began to suffer from piles, and was treated for them, but received no benefit. On seeing her she complained of diarrhœa, mucous discharge, occasional losses of blood by the bowel, and very great pain. In the rectum, about 4 inches up, could be felt a hard, irregular, epitheliomatous mass, involving the recto-vaginal septum and the right wall of the gut; it bled on the slightest touch, and was very adherent to the tissues around; the lumen of the intestine was considerably narrowed, preventing the passage of the finger through the growth.

On January 16th, 1886, inguinal colotomy was performed; the intestine instantly bulged into the wound, and was sutured in the following manner: At the upper angle of the wound sutures were introduced through the muscular and serous coats at the anterior aspect of the gut, but at the lower angle they were passed through the muscular and serous coats at the posterior or mesenteric border of the gut; by this means I thought I should get sufficient spur, and certainly this was a great improvement on the former case, for

fæces only occasionally passed below, and that was after purgatives were given.

January 17th: The dressings were removed. I opened it to the extent of about 1 inch.

January 19th: An aperient was administered, and the bowels acted well through the artificial anus, a few hard masses of old fæces passing up from below.

February 3rd: The wound was nearly healed, and the patient quite comfortable as regards the colotomy; but the mass in the rectum had rapidly grown, causing much pain and bladder trouble.

February 5th: I divided the bowel upwards, as it seemed inclined to contract and force fæces towards the anus.

February 15th: She went to the country, the bowels acting by the artificial anus; but the disease in the rectum was rapidly extending, and had ulcerated through the recto-vaginal septum. I saw her some months after, and found that the artificial anus had been allowed to contract, and some of the motion passed below. The patient died six months after the operation.

This case, again, did not quite satisfy me, for although at first fæces rarely passed below the poor spur, they sometimes did. I felt the operation was still not perfect, and would not be so until two separate mouths were made in the wound, that is to say, till the double-barrelled gun appearance was obtained.

Case III.—E. C., aged 43, single. About a year before I saw her, bowel trouble commenced with diarrhœa, straining, passing ribbon-shaped motions, occasional loss of blood, and considerable pain. For this Dr. Crosby was consulted, who found malignant disease high up in the rectum. When I saw her the growth had greatly increased. She had an anxious expression, complained of great pain, with an offensive discharge from the bowel.

On examination, a hard epitheliomatous tumour could be felt involving the entire circumference of the gut; the growth so blocked the rectum as only to admit a No. 12 catheter. The abdomen was distended, and hard masses were felt along the course of the colon.

On April 6th I performed inguinal colotomy. The gut was considerably distended with hard fæcal matter; this I pushed up, so that it might be out of the way, and allow the suturing to be easily done. The same night she vomited, temperature subnormal, tongue moist, pulse 92. The urine had to be drawn off, and opium was given. There was some discharge through the dressings, but, considering the condition of the patient, I did not deem it wise to disturb her by dressing the wound that night.

April 7th: As the intestine and abdomen generally was distended, I opened the gut; this was followed by the escape of much flatus, which afforded great relief.

April 9th: The gut was rather prominent and œdematous, but as I thought this would subside I did not remove any of the prominent walls; and there I did wrong, for although the œdema went in a day or two a prominence remained, but not sufficient in any way to inconvenience her.

April 21st: She was quite well and very comfortable; no pain in the rectum; the result was nearly perfect, motion only occasionally finding its way below. The only drawback to perfection was that in this case the walls of the intestine were not removed, and so the gut was a little more prominent than desirable.

In seven of my cases the mesentery was of the short variety, and no spur was procurable. In these instances the patients' anatomical peculiarities were the reason of their suffering discomfort from fæces occasionally passing per rectum, as well as by the inguinal opening, and thus causing pain and irritation.

Case XXII.—W. F., aged 33, a cachectic-looking man,

was admitted into the Great Northern Hospital in September, 1889.

He began to feel weak in January, 1889, and in February his illness commenced with diarrhœa. The motions, which were frequently passed, were watery and slimy and contained blood. There was almost constant tenesmus.

He had been unable to work since the end of February, and the symptoms had continued without intermission, and had grown worse. A considerable amount of flesh had been lost; much blood had never been passed, but a month before admission a few clots had come away.

His abdomen was very distended and tympanitic. In the rectum, about 2½ to 3 inches above the anus, was a narrow stricture, which did not admit the finger. There was considerable induration around, especially in front, where a large, hard, rounded mass could be felt between the rectum and the bladder. The mass was quite fixed. There did not seem to be much ulceration, and the examination did not produce hæmorrhage.

On September 11th inguinal colotomy was performed. Clear serous fluid escaped from the peritoneum. The finger, when passed into the abdomen, came upon a mass of enlarged glands. These so bound down the gut that it was with difficulty brought into the wound. Even then so small an amount could be pulled out that the mesentery could not be reached, and the formation of a proper spur was impossible. The gut was therefore fastened to the edge of the wound as far back as could be effected without producing too much tension.

On the 13th the bowel was opened, and immediate relief given. On the 17th the stitches were removed, and the opening into the gut was widened. On the 23rd, after medicine, some fæces came through the wound; but a large amount passed from the anus.

On the 30th the wound was examined, and the finger passed with equal ease upwards and downwards; there was little or no spur. Considerable masses of hard fæces were passed, chiefly by the rectum, for a few days preceding October 4th.

On the 19th the patient had a rigor and a shivering fit.

The temperature rose to 102·6°, and he felt sick. The wound looked well. Temperature kept up to 102° till the 23rd, when he again felt sick and had headache. In the evening temperature rose to 105°, and it was noticed he had erysipelas of the face; and three days later a blush was observed around the inguinal opening.

On November 28th he died.

On the 30th a post-mortem examination was made. The colotomy wound seemed healthy. The peritoneum was in a state of acute peritonitis. The free edges of the coils of small intestine were acutely congested, and their peritoneal surface, especially towards the hypogastrium and iliac regions, was covered with purulent lymph.

A mass of cancerous growth involved the rectum, and produced a stricture 2½ to 3 inches from the anus. The mucous surface was much ulcerated; the surrounding areolar tissue was extensively involved, and so, too, were the surface of the gut and the whole sigmoid flexure. Further up the gut less new growth was found; but as high as the descending colon were nodules of the size of a small pea. The lymphatic glands and vessels of the sigmoid meso-colon were involved; hence it was contracted, and the colon was bound down to the ilium and sacrum. No spur could be observed at the point where the gut was firmly fixed to the inguinal opening. The finger could be passed easily into the lower part of the gut, which was full of dark semi-solid fæces.

Case XXXVII.—Mrs. W. R., aged 61, a patient of Dr. Hugh Webb, six weeks previous to my seeing her, had had a bad attack of constipation, lasting fourteen days; with great difficulty she was relieved. About a fortnight before my seeing her she had another attack of obstruction, and the lump in the left iliac region became painful and increased in size, and the temperature rose to 103. The patient of late had lost much flesh; when the bowels acted, the motions were always small, and she passed slime and blood at times.

On rectal examination, nothing could be felt. In the left iliac region was a large swelling, red on the top—in fact, on the point of bursting. I was of opinion that the mass

was caused by the stricture—malignant in nature—giving way, and that thus some of the fæces had become extravasated. Accordingly, ether was given, and I determined first to explore the swelling. An incision, about an inch, was made, and some very offensive pus was evacuated. On passing my finger into the mass, I found it to be as I suspected—a large mass of cancer of the sigmoid flexure.

I at once did inguinal colotomy, only rather higher than usual. The sigmoid was found and treated as usual. I could not make a spur, for fear of injuring or pulling upon the malignant mass.

Two days afterwards I opened the gut, and from that date she did well, the bowels acting freely from the inguinal opening.

I heard from Dr. Webb that she died five months after the colotomy.

Case XLII.—M. G., aged 52. Sixteen months before had pain on defæcation, bearing-down pains, and jelly-like discharge from the rectum. Since then had passed this jelly-like discharge at every action of the bowels, and small quantities of blood occasionally. Had had constant pain on defæcation, bearing-down and shooting in character. The bowels acted as often as thirty times during the day and night, and frequently fourteen or fifteen times. She passed only a little solid matter at a time, and there was much straining on defæcation. The motions were sometimes flat, at others in small round lumps.

November 10th, 1890: The patient being under ether, I performed inguinal colotomy on the left side. The patient being a stout woman, the abdominal parietes were thickly lined with fat. The mesentery was found to be too short to allow a loop of bowel to be drawn out of the wound, so it was simply secured to the skin by five or six silk sutures.

Several appendices epiploïcæ were ligatured and removed. A mass of lumbar glands could be distinctly felt on passing the finger through the wound.

November 12th: Dressed wound. Patient feels quite comfortable, with the exception of a slight cough. No

abdominal pain or distension. November 13th: Gut opened; some little difficulty owing to its being retracted. Not much flatulent distension of abdomen. November 14th: Cough much worse. Evening temperature 100·6° Fahr. Bronchitic sounds back and front of chest. November 15th: Removed four stitches, as they were causing irritation. The bowels have acted well through the inguinal opening. No action per rectum.

November 16th: Bowels acted freely four times through inguinal opening, and some motions passed by rectum.

November 22nd: Had an action of the bowels per rectum.

November 23rd: Fully-formed motion per rectum.

December 6th: Discharged, with truss fitted. Had been up during the week. Temperature normal since the 16th. No prolapse of mucous membrane. Fæces frequently passed by rectum, as well as by inguinal opening.

Case XLV.—Dr. P., aged 62. Came with the following history: that for some months he had had bowel trouble, diarrhœa, and had been treated for dysentery; about five days back bowels refused to act, and he had great abdominal pain. Took many purgatives without effect. On examination malignant disease high up in the rectum, completely blocking the gut; abdomen rather distended and tympanitic. Colotomy done next day, December 28th. On opening the abdomen found the gut not very distended, but it had very little mesentery, so it was impossible to get it up enough to make a good spur; no mesenteric suture could be used. The peritoneum was found to be studded with malignant nodules, and a good deal of peritoneal fluid escaped. The next day, as the distension was great and caused him a good deal of discomfort, a little nick was made into the gut and a quantity of wind escaped, which afforded him great relief. On December 30th, opened the gut freely, and on the next morning the bowels were very freely relieved after a dose of castor oil. From this time all went well as regards the colotomy. The only trouble the patient had was the cutting pains he constantly suffered in the abdomen, no doubt due to the cancerous nodules in the peritoneum, even any very slight laxative causing

great pain. He returned home on January 17th. As regards the general condition, vastly improved, but at times complaining deeply of the cutting pains about the abdomen.

May 20th: Thinner; bowels acting freely through colotomy opening; no protrusion. Still, however, cutting pains at times in the abdomen. Abdomen rather distended, probably due to ascitic fluid.

At first motion passed by inguinal opening and rectum, but of late none by the rectum, due, no doubt, to the fact of the rectum being completely blocked by the cancerous mass.

Margaret H., married, age 31. Admitted to St. Mark's Hospital on July 18th, 1891.

About seven months before patient noticed great pain in the bottom of her back, worse at night. After a time pains were noticed in the epigastric region, and in the lower part of the abdomen, accompanied by a bearing-down sensation or a desire to go to stool.

Since then the patient had occasional discharges of blood per anum, and pain during and after defæcation. The motions were flattened and covered with slime. There was tenderness on pressure above the pubes, and also above the crest of the ilium on the right side.

July 21st: Patient being under gas and ether, I performed left inguinal colotomy. Unable to do the mesenteric stitch owing to the shortness of the mesentery. Very bad malignant disease of the uterus, and extending to rectum high up, pressing on it but not ulcerating into the gut. Malignant peritoneum.

July 22nd: Opened the gut, as it was rather distended.

July 26th: Slight action from the lower bowel, and fæcal impaction in same removed with finger through the artificial anus.

July 28th: Free action from lower bowel.

August 4th: No spur, and bowel discharging from the upper end, some of the fæces passing into the rectum.

August 8th: Discharged. Patient feeling relieved. Died three months after operation.

Prolapse or Procidentia from the Inguinal Opening.—This may occur either from the upper end of the gut, *i.e.*, of the part which is continuous with the descending colon (Fig. 26), or from the lower end, *i.e.*, of the part leading to, and continuous with, the rectum (Fig. 27). Sometimes, indeed, there may be prolapse from both ends at the same time (Fig. 28).*

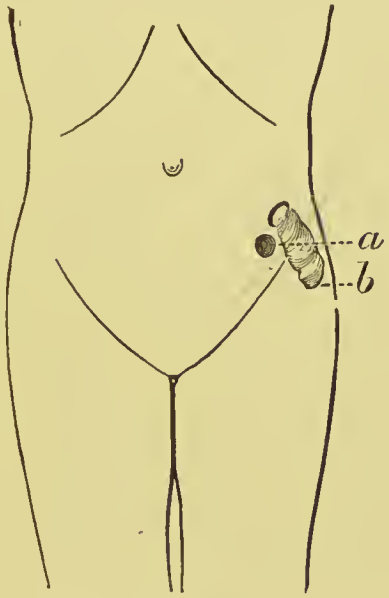

FIG. 26.

I have previously observed that it is of far more importance to prevent this condition when patients are likely to have a fairly long lease of life, and it is on that account that I devised the supplementary operation already described.

Now we know (and my own cases lend cor-

* Figs. 26, 27, 28, are copied from photographs of cases I have seen.

roboration) that prolapse occurs only when there is a long mesentery which enables the gut to intussuscept through the part of the gut which has been fixed, *i.e.*, sewn up to the belly wall.

I arrived at this conclusion from noticing that when there was a short mesentery there was no prolapse.

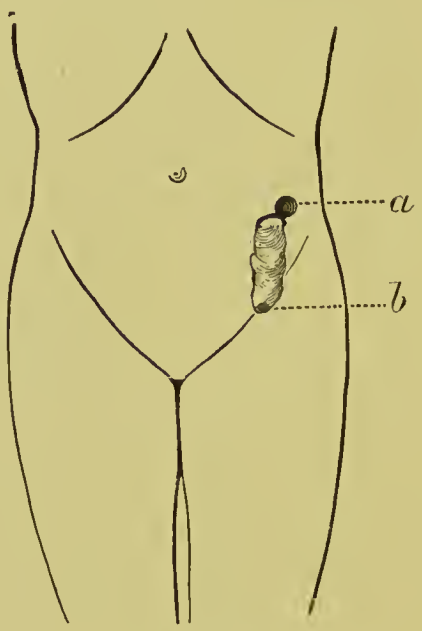

Fig. 27.

Again, whenever I had performed the supplementary operation, *i.e.*, whenever I had drawn out and removed the slack portion of the gut, there was once more no prolapse.

To obviate this prolapsed condition Mr. Cripps has advised that the gut should be pulled down until it is taut upon the upper end, and that all the slack portion should be returned into the

belly, and that then the gut should be stitched up to the skin wound. No doubt this is a good method, for there can then be no prolapse from the upper part of the gut. Nevertheless, this plan does not prevent prolapse from the lower part of the intestine when the mesentery is long.

However, the suggestion is of much value, and

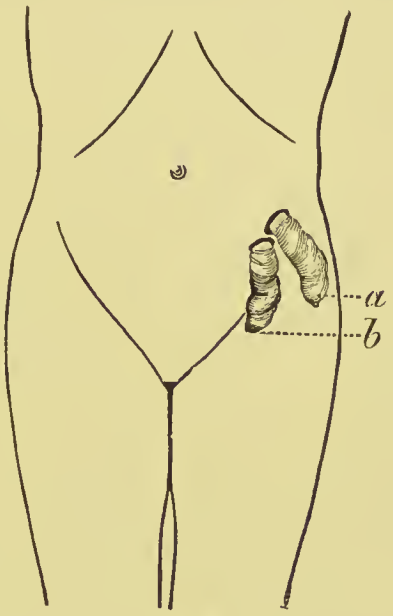

Fig. 28.

should always be carried out in malignant cases when the supplementary operation is not advisable.

Lastly, I have seen prolapse occur from both ends at the same time, not only in my own cases, but in those of others (Fig. 28).

Prolapse took place in 16 out of my 60 cases.

In 5 out of the 16 from upper end alone (Fig. 26).

In 6 out of the 16 from lower end alone (Fig. 27).

In 5 out of the 16 from upper and lower end together (Fig. 28).

In all of these cases the mesentery was either long or medium in length, though the prolapse did not occur in every instance of a medium-sized mesentery.

Further, prolapse did not take place in any case where the supplementary operation had been performed, in spite of the great length of the mesentery in a large number of these instances.

Cases illustrating Prolapse from Upper *End alone.*

Case VII.—In 1887 I saw Sarah C., a married woman, aged 54. Her rectal trouble had begun with pain and the occasional passage of blood. When she at last consulted a medical man, he at once discovered that she had malignant disease of the rectum, which commenced about 3 inches up. At first she was ordered laxatives, Chian turpentine, and a good nutritious diet.

Four months after the beginning of this treatment I saw her, and found the rectum in the following condition: About one inch up the bowel was a large, hard, ragged sore; this extended all round the bowel, and greatly involved the recto-vaginal septum. As she complained of great difficulty in getting the bowels to act, and was in constant pain from the accumulation of motion in the growth, I strongly advised inguinal colotomy. The operation was performed in the usual way, there being no difficulty in finding the gut,

which was brought up into the wound and fixed well outside.

That night temperature rose to 99°; but there was no abdominal tenderness or distension, and she suffered very little pain.

On the second day after the operation I removed the dressings, and opened the gut, cutting away portions of the walls of the gut. There was a well-formed spur.

In a fortnight from the operation the patient returned home perfectly well, and entirely freed from the pain in the bowel which she had previously suffered. But there was a prolapse of about 3 inches from the upper of the two openings.

Case XXXVI. — Emma R., aged 62, was admitted into the Great Northern Hospital in the early part of August, 1890. She had been attending for some time at St. Mark's Hospital, for cancer of the rectum. She had occasional attacks of pain; the bowels were fairly regular, and evacuation gave rise to no pain.

On August 13th inguinal colotomy was performed.

On the 19th the gut was opened.

On September 1st the remainder of the gut was removed. The patient continued to do very well indeed, and on the 3rd was allowed to get up on the couch.

On the afternoon of the 6th she complained for some time of pain in the abdomen, and at three o'clock some black fluid was passed from the lower opening.

Three hours later about 1½ pints of dark, offensive fluid were found in the bed, and when the dressings were removed the lower opening was discovered to be discharging blood. This was syringed out, and a pint more of dark fluid came away, together with some bright blood. The odour was fæcal. The lower opening leading to the cancer was syringed out with perchloride of iron, which together with plugging with wool, at once stopped the bleeding.

The patient felt rather weak after this, and was kept in bed for a few days longer.

On the 15th she had greatly improved, and was allowed to get up again.

On October 8th she was discharged.

In November I saw her, and found prolapse of about 3 inches from the upper end; none from the lower.

November, 1891: Still alive. No further prolapse.

Case XLIV.—November 7th, 1890: Mrs. B., aged 62, came to me. For many months had had bowel trouble, great constipation, and, about a week previous to my seeing her, her bowels had ceased to act.

On examination, found, about 4 inches up, a hard growth involving the entire circumference of the bowel, and also filling it up, so that I was unable to pass the smallest-sized bougie even into the stricture. The abdomen was not distended, but many scybala could be felt in the intestine. She also informed me that for some time she had been greatly troubled with her water; this I thought was probably due to the growth involving the bladder.

Left inguinal colotomy was performed on November 8th, and was finished in twelve minutes, a fair knuckle of gut being pulled out and fixed so as to procure a good spur. After the operation she was very comfortable; temperature normal.

The next day, as she was rather distended with wind, I opened the gut freely, and a quantity of flatus escaped and afforded great relief.

The next morning she had a dose of castor oil, but the bowels acted only slightly; this I found was due to an impaction, which I broke down, and freely removed by an injection into the opening.

November 13th: I cut away some of the excessive walls of the intestine; no great bleeding.

From this time she progressed rapidly without any interruption. Bowels acting freely daily from the upper end, which prolapsed a little; was fast gaining strength, and was preparing to go home, when, on November 20th, she complained of great pain about the right iliac region and began to vomit.

I then heard she had had pain there before, and that a swelling had appeared there, for which she had worn a truss.

On examination I found a tumour about the size of an orange in the iliac region, and thought it might be an

abdominal hernia. This was not very tender, but was hard, and there was no impulse on coughing.

The next day the temperature rose; tongue became dry; the bowels acted, but her aspect became drawn.

I must here remark that the water was rather scanty and offensive, but that was thought to be due to a little cystitis, as a catheter had to be used the first few days after the operation.

On November 22nd, as she had had a restless night, the swelling had increased in size, and in every way she was bad.

Thinking it was strangulated omentum, through some weak part of the abdominal wall, I determined to explore the swelling at once. Accordingly, under chloroform, I cut down over the mass, divided the skin and belly-muscles, and was surprised not to find a hernial sac. I then opened the peritoneum and saw a roundish swelling; this I aspirated, and drew off a quantity of fœtid urine. Accordingly, I opened up the cyst, and stitched its walls to the abdominal wall. When I examined the swelling I then found it to be a hydronephritic right kidney.

The patient did wonderfully well; the cyst was washed out daily and the fœtid condition passed off, and on November 30th, ten days after the second operation, the drainage tube was left out. The wound was healthy and beginning to close, and the patient got up daily. The bowels were acting freely from the colotomy opening, which was quite well.

On December 9th she made arrangements to go home.

The next day, more than a month from the colotomy operation, and nearly three weeks from the day of the kidney operation, she became very excited at the thought of going home, went to bed, and slept well for about three hours, then woke and sat up; and on sitting up the nurse saw she looked faint, went to her and found her dying. Brandy, hot bottles, etc., were used, but she died in a few minutes.

Post-mortem showed firm, malignant mass completely blocking the rectum and adherent to a piece of small intestine but not opening into it.

Right kidney enormously dilated and cystic; all secreting

structure nearly gone. No stones, ureter dilated down to the bladder, but at this point it appeared eonstrieted; in the ureter were many phosphatie-looking masses. Left kidney large and diseased. The spur was perfeet, but the mesentery eonneeted with the upper opening was slaek, so allowed of the prolapse. Chest and head not examined, as I was only allowed to examine the abdomen.

Case XLIX.—Mrs. A., aged 54. I was requested to see her by Dr. Godfrey on March 29th, and learnt the following, viz., that for some months she had had pain and swelling on the right side of the pelvis, and that pus was diseharged by the bladder, and also through the vagina from the uterus; but the last week she had been in agonizing pain in the lower part of the abdomen, and the temperature had been very high. On the day I saw her a swelling appeared above the pubes; this was very red and exeeedingly tender.

Chloroform was given. I opened the swelling above the pubes and let out a quantity of offensive pus. The patient was greatly relieved.

About a month later I met Dr. Griffith and Mr. Godfrey in eonsultation, for the patient was in great and frequent pain, passing pus in the water, pus and fœtid material from the uterus, and also the same kind of offensive diseharge was eoming from a sinus above the pubes. The motion was also leaking through all those cavities, and the abdomen was beeoming distended, as little or no motion passed by the rectum.

In the reetum I could find nothing wrong as far as the finger could reaeh. By a vaginal examination, however, there was a large nodular mass to be felt to the left of the pelvis.

It was agreed to make an ineision in the left inguinal region, as for colotomy, and to make it large enough so as to be able with the hand to feel the nature of the tumour on the left of the pelvis, and act accordingly.

On May 31st this was done; and on passing the hand into the abdomen a large mass could be felt, evidently involving the uterus, bladder, and rectum, and cancerous in nature.

The large intestine was found filled with hard scybala, which could not pass by the rectum. The sigmoid intestine was pulled down until taut on the upper end, and stitched to the wound in the usual way, so as to make a good spur.

On June 2nd I saw the patient. She had done well; and I opened the gut freely, there being a good spur and double-barrelled opening.

I saw her again on June 11th. The bowels had acted freely from the upper opening, and the discharge was diminishing from the abdominal fistula; also the bladder irritation had become much better. There was some considerable prolapse from the upper end of the gut.

She died in November, 1891. No post-mortem allowed.

Cases to illustrate a Prolapse from the Lower *End only.*

Case XX.—Jane T., aged 51, was admitted into the Great Northern Hospital in the middle of June, 1889. A year before she had had a bad attack of diarrhœa, accompanied by loss of blood. This had lasted, off and on, for two or three months, and had caused a good deal of pain in the lower abdomen and the rectum, and had occasioned straining while at stool. For a month or two these symptoms ceased, and then recurred in an aggravated form, and continued for six weeks. After another brief period of cessation the symptoms returned again; and from Christmas, 1888, had never been free from pain at stool, loss of blood, slimy discharges, and straining.

For several months the bowels acted six or seven times a day, but there were no satisfactory motions. During the same period a considerable amount of flesh had been lost. Flatulence had been complained of, but there had never been much distension. The patient was somewhat emaciated, but did not appear worn.

On examination per rectum, about 2 inches from the anus could be felt a hard ulcerated mass, which almost occluded the lumen of the bowel and would not admit the finger.

On June 26th inguinal colotomy was performed in the customary way, a good spur being made.

On the 28th a small opening was made in the bowel.

On July 3rd the wall of the protruding gut was removed; there was very slight hæmorrhage. Later, pain in the abdomen was complained of. After this the above symptoms were relieved by a good action of the bowels through upper opening.

On the 8th the bowels acted in the desired way, no fæces being passed through the lower opening or per rectum.

On the 21st there was some procidentia of the lower end, the bowels acting freely from the upper opening.

She was discharged on the 27th. In August, 1889, I saw her: she was occasionally troubled by prolapse from the lower opening, which came out at times to the extent of 4 inches.

Case XXXVI.—Mrs. I., aged 71, saw me on October 4th, 1889. For eighteen months she had suffered from hæmorrhage from the rectum, which had become worse of late, and had been accompanied with a constant desire to go to stool, but at each action she passed only mucus, blood, and a little liquid fæces. She was also troubled by frequent straining and considerable pain in the bowel.

On examination, I found a large mass of cancer, painful to the touch and almost completely obstructing the rectum. The abdomen was rather distended, and about it could be felt hard scybalous masses. Inguinal colotomy was performed. The abdominal wall was found to be well covered with fat; there was a lengthy mesentery, allowing a fair quantity of large intestine to be pulled out.

However, as she was old, I only fixed up a small knuckle of gut, so as to ensure the making of a good spur.

Three days after the operation I freely opened the gut, but did not cut much away. There was a good spur, a double-barrelled opening, and no fæces passed by the rectum. The patient was greatly freed from pain, and was relieved of her distension.

She died eight weeks after the operation, of general cancerous cachexia. In this case I did not remove all the overhanging pieces of gut. About a fortnight after the operation the lower part of the gut prolapsed considerably; this I reduced, but it recurred from time to time.

Case XXXIII.—Robert H., aged 73, was admitted into

St. Mark's at the end of May, 1890. He had enjoyed good health till a year before that date, when he began to suffer from diarrhœa, the bowels acting six or seven times a day, and blood being passed at stool. There was also a slimy discharge, which was at times mixed with fæces, but which was at other times evacuated by itself. He had lost a considerable amount of flesh, especially for the last two months. He had been examined, per rectum, by Dr. Long, who advised him to attend at St. Mark's as an out-patient. Three weeks later he was admitted as an in-patient.

On June 2nd inguinal colotomy was performed, no difficulty being experienced in bringing out the gut. On the 5th the gut was opened, and the lower aperture seemed to be the upper one. On the 16th the superfluous bowel was excised under ether. On the 21st there was a procidentia 6 inches from the lower opening.

On July 2nd an injection of Condy's fluid into the rectum forced some fæces through the lower opening, which was thus proved, after all, to be the lower aperture. The procidentia, though shrinking, was still of considerable extent. Rather more than a fortnight later the patient was given a truss, and was discharged.

Case XXXV.—Edwin G., aged 48, a cachectic-looking man, was admitted into the Great Northern Hospital on July 23rd, 1890. He had had anal trouble for five or six years, and in the preceding February had been to St. Mark's Hospital, where Mr. Alfred Cooper performed excision of rectum. Since that time he had suffered from incontinence of fæces.

On admission, the rectum was found to be in a markedly strictured condition. There had been considerable recurrence of the cancer, and part of the growth was beginning to appear outside the anus. There was an enlarged gland in the right groin. The patient experienced pain, especially at night, and was troubled by a discharge from the rectum.

On July 30th I performed inguinal colotomy in the usual way, Mr. Cooper being away. The patient progressed very favourably; there was no distension, and little mucus was passed per anum.

On August 1st the gut was opened, and some solid fæces were removed. On August 7th the stitches were taken out, and the wound looked well. On the 11th the superfluous gut was removed. Some hæmorrhage occurred. The patient experienced some pain, showing a tendency to faintness. On September 6th he was discharged.

On November 16th he was seen again. There was a good spur. No motion passed by the rectum. There was a prolapse of quite 2 inches from the lower end; none from the upper.

Case L.—Mr. G., aged 56. For about two years had had cancer of the rectum, and suffered great pain and diarrhœa; but of late the chief trouble was constipation and pain in the bladder.

Patient looked very ill and wasted, and was evidently worn out with pain. In the rectum was a large malignant mass, very extensive, involving the prostate, and which had also grown down, so as to involve the sphincter; the finger could not be forced through the growth.

February 3rd: I did inguinal colotomy in the usual way; found very long mesentery, pulled down gut, so as to have it taut on the upper end, and returned the gut by the lower end into the pelvis. All went well; made a good spur.

I saw the patient on February 5th; up to that time he had not had a bad symptom. Then opened the gut freely, and cut away some of the walls of the gut; not much bleeding. Bowels acted freely on the next day, and from that time all went well. The bowels acted from the upper orifice; good spur. At times the gut prolapsed from the lower end to the extent of about 6 inches; but by care, when his bowels were acting, he could keep it in. He was greatly relieved by the operation.

Cases illustrating Prolapse from the Upper *and* Lower *Ends together.*

Case V.—B. J., aged 66, always had good health until ten years before my seeing her, when she had inflammation of the bowels, and was ill for about three months. Two

years before seeing me her rectal trouble commenced with what she called an attack of piles and stoppage of the bowel. She attended as an out-patient at a hospital for some time, and then was advised to have colotomy performed, but declined to have it done. When I saw her her bowels had not acted for a week, and for some time previously the motion had passed only by the vagina. On examination a mass of cancer was found filling up the rectum, and protruding outside the anus; the vaginal wall was involved, and a large opening existed in the recto-vaginal septum; the buttocks were hard and infiltrated with cancer, the abdomen distended and filled with hardened fæces. I performed inguinal colotomy on May 31st.

June 2nd: The intestine was opened, and the prominent walls of the gut removed; three vessels required clipping. The double-barrelled appearance was complete.

June 12th: No fæces passed beyond the spur, which was perfect. She suffered considerable pain from the extensive cancer in the rectum and buttocks.

June 20th: The bowels acted sufficiently by the artificial anus. She had little or no pain in the rectum. When she began to get about there was well-marked prolapse, about 2 inches in length, from both the upper and lower orifices. These were easily reduced and kept in.

Case XVIII.—Mary H., aged 51, was admitted into St. Mark's on November 2nd, 1889. For two years previously she had had pain and difficulty with her bowels. At Christmas, 1888, she began to pass blood and mucus per rectum. She was for some time under private treatment, and attended at St. Mark's about a month before admission.

On November 4th inguinal colotomy was performed in the usual way.

On November 6th the intestine was opened.

On November 11th the superfluous gut was removed.

The temperature was never high, and nothing was passed per rectum. The bowels acted through the upper opening. She was discharged on the 1st December, and was seen again in the early part of 1890, when it was

found she suffered from considerable prolapse, from both the upper and lower ends of the inguinal opening.

Case XXVII.—Mr. W., aged 49. Came to me in 1889 with the following history: About a month previously he had been operated upon for piles, but was no better. He had become greatly emaciated lately; his aspect very sallow, with a drawn expression; and he constantly went to stool, passing blood and slime, but never had good relief. He also suffered great pain. Upon examination I found extensive malignant disease, about 5 inches up. I advised inguinal colotomy, which he consented to; accordingly it was done in the usual way, there being no difficulties. The mesentery was long, and a fair amount of gut was fixed up in the wound. Three days after the operation, as he was distended, I snipped the gut, and gave him great relief. On the fifth day the gut was opened freely, and all the superfluous part of the intestine was cut away. Pain was experienced only when the mesentery was cut through. In this case the spur was good, no fæces whatever passed by the rectum; there was some prolapse from both openings. The bowels acted from the upper opening. The growth in the rectum was evidently very malignant, as there was constant discharge. Seven weeks after the operation I discovered that the liver was enlarged, and nodulous. He died five weeks later, three months after the operation.

Case XXX.—Tobias B., aged 23, was admitted into the Great Northern Hospital in December, 1889. His rectal troubles did not date further back than seven weeks; the symptoms had been bearing-down pains, and a feeling of the rectum not having been emptied; further, constipation had alternated with diarrhœa. For three weeks there had been a discharge of blood and muco-pus.

The patient was growing thinner, and felt weak. There was a history of syphilis. On examination per rectum, 2 inches above the anus was a hard, rugged, crater-like opening, which was fixed and very painful. Pus and blood were left on the finger, which could not pass above the opening in consequence of a narrowing of the gut.

On January 1st, 1890, inguinal colotomy was performed. The small intestine presented first; a piece of the large intestine and a portion of its attached mesentery were then drawn out of the wound. A good spur was made, and the gut was left in situ.

On the 7th the gut was opened.

On the 9th all the stitches were removed. On the 14th the protruding portion of the gut was cut down to the level of the wound. On the 23rd he left the hospital. When seen a month later there was prolapse from both openings.

Case XLVIII.—C. A., aged 33. On November 22nd, 1890, the patient was admitted into St. Mark's with the following history: Six weeks previously she first began to have pain in the lower part of the rectum, worse on going to stool, and noticed light blood in small quantities mixed with the motions. The bowels acted very irregularly; she had gone two or three days without their acting.

On November 12th last, went to see Dr. Maurice, of Marlborough; was examined by him, and told she had a growth up the bowel, and recommended to come and see me.

On November 20th I saw her, and found her to be suffering from carcinoma recti. The finger just being able to reach above it, excision was advised, and on November 24th, I proceeded to excise the growth, which was not very favourably situated, as it involved chiefly the anterior wall of the rectum. There was some difficulty in separating the rectum from the vagina; as much of the bowel as possible was removed. Douglas's pouch could be seen bulging down, but was not opened.

She was discharged from hospital January 17th, 1891. No recurrence of the growth could then be felt.

On February 21st she was readmitted, the growth having returned and the gut contracted; and on February 23rd, I performed left inguinal colotomy.

The mesentery, which was long, was secured to the skin by a deep silk suture. The loop of gut was not drawn out to its full extent, this being a malignant case, and was

secured to the skin by several silk sutures passed through the serous and muscular coats.

February 28th: Opened bowel. March 5th: Redundant piece of bowel cut off with scissors. March 24th: Discharged. Bowels acted regularly through the upper of the two inguinal openings. The lower was contracting.

Seen later, prolapse from both ends.

Case LI.—Thomas E., aged 53, was admitted into the Great Northern Hospital at the end of March, 1891.

He had felt in perfect health till the preceding Christmas. About that time he observed discomfort, for he had no sense of relief after going to stool, and had to return there shortly afterwards, straining greatly. There was no pain during the act of defæcation.

Since that time the bowels had become more troublesome and so constipated that the patient had to go to stool several times a day, only passing a very trifling amount on each occasion. He never passed any blood or slime.

He had constant pain of a 'forcing' character, localized in the rectum.

On admission on March 27th he was seen to be in the following state: About 3 inches from the anus the rectum was completely strictured. The finger could just be passed into the lumen, but not through the stricture. The edges of the stricture were thickened and indented, and felt typically epitheliomatous. In the abdomen hard scybala could be felt in the sigmoid flexure and in the descending colon.

On April 1st inguinal colotomy was performed in the usual way. On the 6th the gut was opened. On the 14th the superfluous gut was cut away. On the 16th the bowel acted through the upper opening, no fæces having passed per rectum since the bowel was opened on the 10th.

On the 22nd the patient got up for the first time.

On the 29th he was discharged. There was a good spur, and a prolapse from both openings. The bowels acted through the upper opening.

Action of the Bowels.—The action of the bowels may take place either from the upper or from the lower end of the double-barrelled opening resulting from my operation.

The observation of this fact has caused me to alter some details of my procedure. My former practice was to pass the mesenteric sutures through the skin nearer the lower angle of the wound than I do now; for I thought the purpose of the lower opening was to clear out the rectum or allow any retained fæcal matter or discharge to come up, whereas the upper orifice had to be kept patent and large for the new anus. I now pass the mesenteric suture through the middle of the wound, for in seven cases the gut, when fixed up to the surface, was twisted so that the bowels acted through the lower opening, the upper one being continuous with the rectum. In most of these cases the mesentery was long; in others it was reported to have been medium, but it may have been in reality long, and have been rendered of medium length by the twist. In my criticism of Madeling's and Paul's method, I have dwelt on the danger of this twisting, if the gut is divided and the lower end is fixed up in the belief that it is the upper end.

Cases to illustrate Action of Bowels from the Lower *of the Two Orifices.*

Case XVII.—Eliza C., aged 43, was admitted into St. Mark's early in September, 1889. About ten years before she had had an attack of low fever (dysentery), with purging and loss of blood. Six months after that illness she went to St. Bartholomew's; her symptoms were bleeding, small motions, pain, and constipation. She was told that she had stricture, and bougies were passed for three weeks, after which she ceased to attend at the hospital. She had had no treatment since that date. Further, she had several fistulæ on both sides of the anus—more on the right side than on the left. In addition to these she had recto-vaginal fistula. Two inches up the bowel was a long, hard, narrow, fibrous stricture. Through this No. 2 and No. 3 bougies were passed, for at first she refused to undergo colotomy; but at length the pain became so severe that she, of her own accord, asked for that operation to be done.

On September 9th, inguinal colotomy was performed in the ordinary manner, and 6 inches of gut were drawn out.

The next day the gut was opened, and a large quantity of flatus and fæces was allowed to escape. The patient had pain in the right buttock from a large tense, brawny swelling, 2 inches from the anus, that surrounded two fistulous openings, which discharged fluid fæces.

The bowels acted through the colotomy opening, fistula, vagina, and anus. The swelling on the buttock was more prominent. Masses of undigested food kept blocking up the colotomy apertures. On inserting a probe into the buttock a large cavity was found, which was opened up, much fæces and pus escaping.

On the 19th the supplementary operation was performed, and the outdrawn gut and omentum were removed. The clamp was not used, nor were anæsthetics employed.

The next day (the 20th) the bowels acted through the lower opening, the gut being evidently twisted.

On the night of the 9th temperature again rose above

102°, and on the next day one of the openings in the buttocks was enlarged to allow a freer exit of pus.

On the 12th all motions passed by the colotomy wound, but some old motions still occasionally escaped from one of the fistulæ.

On the 18th the patient was discharged relieved, and went into the country.

In a few weeks she was well. No prolapse; bowels acting from the lower opening.

Case XIX.—R. G., aged 26, consulted me in March, 1889. For some time he had had rectal trouble, constantly going to stool and passing blood and mucus. He had lost more than a stone in weight in a month, was greatly emaciated, and had a very malignant aspect.

On examination, there could be felt high up in the rectum a hard, ragged mass, which was tender to the touch, and bled readily on manipulation. The odour of the fæces was evidently that of malignant disease.

My colleagues at St. Mark's confirmed my diagnosis, and to relieve him of his pain and distressing diarrhœa, inguinal colotomy was performed. The mesentery was medium. The intestine was drawn out, and fixed to the wound.

The next day, as there was some distension, the bowel was snipped, and wind was allowed to escape.

On the fourth day the bowel was freely opened under ether, and the overhanging gut was cut away on a level with the skin. There was little bleeding, and no clamp was necessary.

In a few weeks the patient left the hospital, gaining flesh and entirely relieved of pain. The bowels acted from the lower opening, thus showing that the gut had been twisted when it was fixed up.

The patient is still alive, but very thin.

Case XXV.—Miss W., aged 35, was seen in June, 1889. Her history was that in the previous autumn she had had an attack of rectal pain, with frequent discharges of blood and mucus. She was examined, and was told that she had

a growth in the bowel, and that nothing could be done to relieve her, unless great obstruction came on.

When I saw her she had been rapidly losing flesh; she complained of great pain and bearing down, and of frequent discharges of blood. Little or no motion was passed except in a very watery condition. Upon examination of the rectum I found, about 4 inches up, a large epitheliomatous mass, adherent to the vagina, and completely blocking the rectal tube. I advised inguinal colotomy, which she readily consented to undergo.

The operation was performed in the usual way; the abdominal wall was extremely vascular. The parietal peritoneum was stitched to the skin, and the large intestine presented itself at the opening. The mesentery was of medium length, and a large knuckle of gut was pulled out to make a good spur.

Three days afterwards the protruding gut was opened and cut away. There was no pain, but there was considerable bleeding, eight clips being put on. At that time I had not begun to use the clamp.

Three weeks after the operation she was up, and in a few days she returned home. The inguinal opening presented a double-barrelled appearance, the bowels acting from the lower aperture. There was no procidentia from either opening. She had entirely lost the pain in the rectum, and there was only an occasional discharge of blood-stained mucus. No fæces whatever passed by the rectum.

There were four other cases in which the gut was twisted when secured to the wound, so that the bowels acted from the lower of the two openings.

As in these cases there were other topics of interest bearing on points I have mentioned, I have put them under other headings—Cases x. and xv., Supplementary Operation; Cases xvi. and xxix., Adherent Omentum Cases.

Other Peculiarities.—In the many cases I have operated upon there are various difficulties, or rather peculiarities, which are worth notice.

When the patients have been fat there has sometimes been difficulty in working through so small an incision as 2 inches. It might then have to be enlarged; but I have never yet been obliged to increase the size of the opening.

Case XLVI.—Eliza P., aged 56, was admitted into the Great Northern Hospital on October 30th, 1890.

External to the anus a growth appeared, and, owing to the constriction of the growth, there was great difficulty in introducing the finger into the anus, and much pain was caused.

An examination per vaginam showed that there was a fistula communicating with the rectum in the middle of the growth, which latter extended some inches up the rectum. For a year the patient had had pain on and difficulty in defæcation, and had twice been operated on in the country. For the last six weeks fæces had been escaping, probably through the vaginal fistula. The abdominal wall was somewhat thick, but no distension of the sigmoid flexure could be detected.

On November 5th inguinal colotomy was performed. The thickness of the abdominal wall caused some difficulty in bringing the peritoneum up to the skin, and the appendices epiploïcæ were very large and numerous in the sigmoid flexure. Further, the gut had a very short mesentery, and this, combined with the thickness of the abdominal wall, caused great difficulty in stitching the mesentery in the usual manner.

On the afternoon of the 7th the gut was opened, but the great thickness of the wall of the gut (fully half an inch) made it rather hard to find the lumen of the bowel.

On the 8th a purgative caused a satisfactory motion through the artificial anus. There was then less discharge per rectum, and she was free from pain. For the next week aperients were needed to relieve some constipation.

On the 18th the superfluous gut was removed. There was very little bleeding, and no pain.

On December 7th she was discharged.

Case XXI.—Sarah W., a somewhat pale woman, aged 39, was admitted into the Great Northern Hospital at the end of July, 1889.

Her eldest child was three years old. Five weeks after its birth she suffered from a discharge from the rectum and from difficulty on defæcation. She was admitted into St. Thomas's Hospital, and was treated with rectal bougies. Ever since that date (except for the last three weeks before entrance into the Great Northern) she had passed a bougie herself. For the last nine years she had been an out-patient at St. Mark's, where she had had bougies passed once a fortnight. In spite of a constant and somewhat copious discharge from the rectum and difficulty on defæcation, she had kept fairly well till six months before admission into the Great Northern. At that date her trouble in passing motions had so increased that she was advised to become an in-patient at St. Mark's. She refused this proposal, and continued to attend as an out-patient for four months longer. From that point she had been confined to the house.

On examination per rectum, about $1\frac{1}{2}$ or 2 inches from the anus could be felt the commencement of a tight, smooth, annular stricture, which just admitted the finger; its upper limit could not be reached. The mucous membrane did not appear to be ulcerated.

On July 31st inguinal colotomy was performed. The abdominal fat was great, so that there was difficulty in fixing the parietal peritoneum to the skin.

On August 2nd a small opening was made in the bowel, and some wind was liberated.

On the 3rd there was a little flatulence, and there was

a good deal of discharge. The tongue was bad. Temperature rose to 104°.

The next day the patient complained much of flatulence; the abdomen was distended, but soft, and not very tender. A good deal of wind passed through the opening. During the two next days her condition improved, for the bowels were freely open both by the rectum and by the wound.

A change, however, took place on the afternoon and evening of the 7th. In the evening there was a good deal of hæmorrhage from the wound, which appeared to arise between the bowel and the wound in the abdominal wall. It was arterial, but no bleeding-point could be found. The hæmorrhage, however, was stopped by pressure.

A more serious matter was that on the afternoon of the 7th the patient began to have difficulty in breathing and a slight cough. On that evening the dyspnœa and cough both became worse, and râles and ronchi were abundant. On the morning of the 8th the secretion had evidently increased. Early on the morning of the 9th the patient died.

A post-mortem examination was held.

There was considerable protrusion of the mucous membrane through the artificial anus. The upper and outer portion of the angle of the opening was gangrenous, involving that part of the gut and the abdominal wall. Moreover, the attachment of the gut to the abdominal wall had given way, allowing of communication at this point with the subjacent peritoneal cavity.

The upper lobes of the lungs were very œdematous, the bronchi and trachea being full of serous fluid. The bases were much more solid and congested.

The omentum was found to be well developed, and stretched downwards into the pelvis; on the left side it was firmly adherent to the colotomy opening. There were abundant signs of old peritonitis, especially on the left side and towards the pelvis, the descending colon being firmly bound down, and some neighbouring coils of small intestine being coherent.

On the left side of the abdomen was the appearance of

much recent acute purulent peritonitis. The coils of intestine of the left side were loosely adherent to each other, and to the abdominal wall, by patches of purulent lymph; the neighbouring peritoneum was superficially gangrenous. A considerable amount of pus had gravitated into the lower parts of the cavity on the left side. The upper part of the sigmoid flexure had been opened and was attached to the abdominal opening; the upper and outer angle, which was gangrenous, had become free from the abdominal wound; from this, leading downwards to the lower part of the abdominal cavity, was a track of purulent peritonitis, about half an inch broad, as if the discharge from the wound had trickled down and thus infected the peritoneum.

The whole of the lower and posterior part of the pelvis was filled with a large hæmatoma, which seemed to be fairly recent. The clot was firm and not discoloured or decomposed; it did not enter the peritoneal cavity.

In fat patients, even when there has been a medium mesentery, there has been great trouble in making a spur, and it has been impossible to use the mesenteric stitches. This has arisen, not only from the depth of the wound in the abdominal wall, but also from the frequent presence of a large mass of fat around the intestine and between the layers of the mesentery. Hence the mesentery has been too thick and fixed for the gut to be pulled up and a spur procured.

In fat subjects, again, the amount of the cellular tissue may render it difficult to stitch the parietal peritoneum to the skin. I have

never failed in doing this, though there has been considerable tension on the peritoneum.

With fat patients it is sometimes troublesome to fix the gut to the skin; even if it has been fixed, any vomiting or coughing may tear away the sutures, and the intestine may slip back into the abdominal cavity.

At times the piece of gut to be pulled up has hard fæces in it; if these are in the way, they must be gently pushed upwards or downwards as the operator may think fit.

On one occasion the omentum at the seat of the opening had been glued to the peritoneum by old peritonitis, so that when I had opened the peritoneum I came upon more fat. This led me to think that I had mistaken the transversalis fascia for the peritoneum; but when I cut through the omentum I found I had opened the peritoneal cavity. I stitched the edges of the omentum to the skin all round the opening, as I could not, and did not think it wise to attempt to, separate it from the peritoneum.

Case XVI.—Sarah R., aged 72, was admitted into St. Mark's on August 31, 1889. Twenty years before she had had diabetes, from which she said she had recovered. Six years after that she had suffered from internal piles.

Six months before admission she noticed pains when at stool, and observed that her motions were very small and were decreasing in size. For the last month the motions

had been streaked with blood and mucus, and for the last fortnight there had been a discharge.

An examination revealed a large growth about 2 inches up the rectum, which would not allow the passage of the tip of the index-finger.

On September 2nd inguinal colotomy was performed.

When the incision was made the omentum was found to be adherent, in other words, old peritonitis had caused it to become fixed to the abdominal wall. The omentum was therefore cut through, and the large intestine was pulled through that and fixed up, a good spur being made. The parietal peritoneum could not be fixed to the skin, and the omentum was consequently pulled up through it.

On the 5th the gut was opened.

On the 9th the supplementary operation was performed under anæsthetics. The spiked clamp was put on, and the gut and omentum were removed. Some hours later, when the clamp was taken off, there was no bleeding.

On the 12th the bowels acted through the colotomy wound.

On October 1st there was a clear double-barrelled opening, but in consequence of the gut being twisted the fæces came from the lower aperture. The upper opening (leading to the rectum) was rather œdematous.

On October 12th she was discharged.

Case XXIX.—Mr. A., aged 40, came to see me in November, 1889. He had been ill for some months previously, having been greatly troubled by his bowels acting very frequently but inefficiently. Purgatives had been of little or no use. He had been rapidly growing worse, had lost much flesh, and was suffering from great pain. On examination I found a large crater-like mass of cancer. The abdomen was distended, especially in the left iliac region; it was tympanitic, but not tender. Inguinal colotomy was performed. On cutting down through the abdomen, I found the omentum adherent to the abdominal wall. I accordingly stitched the parietal peritoneum to the skin, and then cut through the omentum, and pulled the large intestine through it. There was not a very long

mesentery, but sufficient to allow me to pull out enough gut to make a good spur.

The next day, as the patient was rather distended, the gut was opened, and I removed a hard lump of motion. Three weeks after the operation, the wound being well healed, as there seemed to be too much overhanging mucous membrane, I cut it all off. There was no pain; six vessels required clipping.

In a few days he returned home; there was no prolapse from either opening. He was greatly relieved of his pain, and no fæces whatever passed by the rectum. Curiously enough, the bowels acted through the lower of the two openings, thus showing that the gut was evidently twisted when fixed into the abdominal wound.

In another case I saw that the sigmoid flexure had been glued down to the iliac fossa so that there was no possibility of bringing the gut to the surface. I therefore closed the inguinal opening, and did the lumbar operation instead. Had I known the extent of the stricture and ulceration, it would have been better to have performed a lumbar or a transverse colotomy from the first.

Sometimes when the mesentery is very short, or almost absent, it is best to pull the gut up and pass a stitch behind the mesentery. Occasionally I have been unable to use the mesenteric stitch, and then I have had to content myself with passing the sutures only through the muscular and serous parts of the gut at the

posterior part, and have merely fixed the intestine to the skin without making a spur.

Case XXXIV.—Thomas B., aged 51, a fairly healthy-looking, somewhat pale man, was admitted into the Great Northern Hospital early in May, 1890.

About a year before he had noticed pain in the rectum after defæcation, and had also had for the greater part of the day pain in the back of a gnawing character.

Until a month before admission he had passed blood several times daily. He had no diarrhœa, constipation, or alteration in the shape of the fæces.

There was a ragged ulceration of the rectum with raised everted edges, which extended to $1\frac{1}{2}$ inches of the anus, and as high as the finger could reach; it spread all round the gut and partly obstructed the lumen. The sigmoid flexure was felt to be slightly distended.

On May 7th inguinal colotomy was performed. On opening the peritoneum the appendices epiploïcæ of the sigmoid flexure were exposed. The mesentery was very short, and the gut had to be stitched to the abdominal wall by sutures passed through the peritoneal and muscular coats, and where possible at the position of the longitudinal bands.

On the afternoon of the 9th the gut was opened with scissors, and the patient was relieved by a considerable escape of gas, etc.

On the 13th the patient was still progressing. There was no pain from the wound or in the rectum. The bowels acted freely through the colotomy opening, and by the anus.

On June 9th the patient was discharged, the bowels acting by opening and rectum.

It will be seen in the following table that I have cited sixteen cases of the supplementary operation, but I have only mentioned ten typical

cases as regards that condition ; the remaining six falling under other heads have been kept back to illustrate their respective peculiarity. The same applies to many various conditions, as, for instance, the ordinary operation, prolapse, spur, etc.

Case and Name.	Age.	Year.	Nature of Disease.	Operation.	Supplementary Operation.	Length of Mesentery.	Spur.	Prolapse from Upper or Lower End, or Both.	Action of Bowels from Upper or Lower End.	Result: Length of Life after Operation, if Known.
1. T. C., Mrs.	44	1886	Stricture, ulceration, and recto-vaginal fistulæ	Left ing. col.	No	Medium	No	No	Upper and rectum	Alive
2. A. H., Mrs.	50	1886	Malignant disease	Left ing. col.	No	Medium	No	No	Upper & rectum	Died 6 months after operation.
3. E. C., Mrs.	43	1887	Malignant disease	Left ing. col.	No	Long	No	No	Upper & rectum	Alive 18 months after operation.
4. T. J., Mr.	59	1887	Malignant disease	Left ing. col.	No	Medium	Yes	No	Upper	Alive 8 months after.
5. B. J., Mrs.	66	1887	Malignant disease	Left ing. col.	No	Medium	Yes	Slight from upper and lower	Upper	Lived over a year.
6. F. C., Mr.	45	1887	Malignant disease	Left ing. col.	No	Medium	Yes	No	Upper	Alive a year after.
7. S. C., Mrs.	54	1887	Malignant disease	Left ing. col.	No	Long	Yes	Slight from upper	Upper	Over 6 months.
8. F. G., Mrs.	54	1887	Malignant disease	Left ing. col.	No	Long	Yes	Very bad from lower	Upper	Alive a year after.
9. C. S., G. N. H.	40	1888	Stricture and ulceration	Left ing. col.	Yes	Long	Yes	No	Upper	Died in 6 months.
10. C. B., Mr.	54	1888	Malignant disease	Left ing. col.	Yes	Very long	Yes	No	Lower	Alive a year after.
11. A. T., Miss	46	1888	Malignant disease	Left ing. col.	Yes	Long	Yes	No	Upper	Alive 16 months after.
12. K. J., St. Mark's	37	1888	Stricture, ulceration, and fistulæ	Left ing. col.	Yes	Long	Yes	No	Upper	Still alive.
13. A. Z., Mr.	52	1888	Malignant disease	Left ing. col.	Yes	Very long	Yes	No	Upper	Over 6 months.
14. W. M., Mr.	31	1888	Malignant disease of rectum and bladder	Left ing. col.	No	Medium	Yes	No	Upper	14 days from bladder hæmorrhage.
15. A. W., St. Mark's	28	1889	Stricture and ulceration	Left ing. col.	Yes	Long	Yes	No	Lower	Alive.
16. S. R., St. Mark's	72	1889	Malignant disease	Left ing. col.	Yes	Medium, Omentum adherent to belly-wall.	Yes	No	Lower	Died in 8 months.
17. E. C., St. Mark's	43	1889	Stricture, ulceration, and fistulæ	Left ing. col.	Yes	Long	Yes	No	Lower	Alive a year after.
18. M. H., St. Mark's	51	1889	Malignant disease	Left ing. col.	No	Medium	Yes	Slight from upper and lower	Upper	Alive 18 mths. after.
19. H. G., St. Mark's	26	1889	Malignant disease	Left ing. col.	No	Medium	Yes	No	Lower	Alive.
20. J. T., G. N. H.	51	1889	Malignant disease	Left ing. col.	No	Medium	Yes	Lower	Upper	8 months after.
21. S. W.	39	1889	Stricture and ulceration	Left ing. col.	No	Very short	No	No	Upper & rectum	Died 10 days after, gut slipped back in belly.
22. W. F., G. N. H.	33	1889	Malignant disease	Left ing. col.	No	Very short	No	No	Upper & rectum	Died 7 weeks after, erysipelas of face.
23. A. H., G. N. H.	27	1889	Malignant disease	Left ing. col.	Yes	Medium	Yes	No	Upper	Alive over 4 months after.
24. R. B., Mr.	19	1889	Malignant disease	Left ing. col.	No	Medium	Yes	Upper	Upper	Died 17 mths. after.
25. J. W., Miss	35	1889	Malignant disease	Left ing. col.	Yes	Medium	Yes	No	Lower	More than 6 mths.
26. T. J., Mrs.	71	1889	Malignant disease	Left ing. col.	No	Long	Yes	Lower	Upper	Died 10 wks. after.
27. T. W., Mr.	19	1889	Malignant disease	Left ing. col.	No	Long	No	Upper and lower	Upper and rectum	Died in 3 weeks.
28. H. Ja., Mr.	75	1889	Malignant disease, 2 weeks' complete obstruction and paralysed	Left ing. col.	No	Medium	Yes	No	Lower	After 6 mths.

27. T. W., Mr.	49	1889	Malignant disease	Left ing. col.	No	Long	Yes	Upper and lower	Upper	Died 3 mths. after.
28. B. L., Mr.	75	1889	Malignant disease, 2 weeks' complete obstruction and paralysed	Left ing. col.	No	Short	No	No	Upper and rectum	Died in 3 weeks.
29. G. A., Mr.	40	1889	Malignant disease	Left ing. col.	No	Medium, adherent omentum	Yes	No	Lower	Alive 6 mths. after.
30. T. B., G. N. H.	23	1890	Malignant disease	Left ing. col.	No	Medium	Yes	Slight from upper and lower	Upper	More than 6 mths.
31. M. G., St. Mark's	41	1890	Malignant disease	Left ing. col.	No	Medium	Yes	No	Upper	Alive some mths.
32. N. O., St. Mark's	48	1890	Malignant disease, and 5 weeks' obstruction	Left ing. col.	No	Short	Yes	No	Upper and rectum	Died in 3 days.
33. R. H., St. Mark's	73	1890	Malignant disease	Left ing. col.	No	Long	Yes	Lower, very bad	Upper	Alive 10 mths. after.
34. T. B., G. N. H.	51	1890	Malignant disease	Left ing. col.	No	Very short	Yes	No	Upper & rectum	Alive 1 year after.
35. E. G., G. N. H.	48	1890	Malignant disease	Left ing. col.	No	Medium	Yes	Slight from lower	Upper	Alive 6 mths. after.
36. E. R., G. N. H.	62	1890	Malignant disease	Left ing. col.	No	Medium	Yes	Upper	Upper	Alive.
37. W. R., Mr.	61	1890	Malignant disease	Left iug. col.	No	Short	No	No	Upper & rectum	Alive 8 mths. after.
38. J. C., Mr.	50	1890	Malignant disease	Left ing. col.	No	Long	Yes	No	Upper	Alive 1 year after.
39. T. P., Mr.	70	1890	Malignant disease	Left ing. col.	No	Medium	Yes	No	Upper	Alive.
40. G. T., St. Mark's	53	1890	Malignant disease	Left ing. col.	No	Medium	Yes	No	Upper	Alive.
41. M. D., St. Mark's	36	1890	Stricture and ulceratiou	Left ing. col.	Yes	Long	Yes	No	Upper	Alive.
42. M. G., St. Mark's	52	1890	Malignant disease	Left ing. col.	No	Very short	No	No	Upper & rectum	Alive.
43. A. D., St. Mark's	24	1890	Stricture, (?) tubercular	Left ing. col.	Yes	Medium	Yes	No	Upper	Alive.
44. K. B., Mr.	62	1890	Malignant disease	Left ing. col.	No	Medium	Yes	Upper	Upper	Alive.
45. C. P., Mr.	62	1890	Malignant disease	Left ing. col.	No	Very short	No	No	Upper & rectum	Alive.
46. E. P., G. N. H.	56	1890	Malignant disease	Left ing. col.	No	Short	Yes	No	Upper	Alive.
47. E. C., St. Mark's	30	1891	Stricture and ulceration	Left ing. col.	Yes	Medium	Yes	No	Upper	Alive.
48. C. A., St. Mark's	33	1891	Malignant disease	Left ing. col.	No	Long	Yes	Slight from upper and lower	Upper	Alive.
49. T. A., Mrs.	54	1891	Malignant disease	Left ing. col.	No	Medium	Yes	Slight from upper	Upper	Died 8 mths. after.
50. T. G., Mr.	56	1891	Malignant disease	Left ing. col.	No	Long	Yes	Lower	Upper	Alive.
51. T. E., G. N. H.	53	1891	Malignant disease	Left ing. col.	No	Long	Yes	Small from upper and lower	Upper	Alive.
52. J. G., St. Mark's	61	1891	Malignant disease	Left ing. col.	No	Short	Yes	No	Upper	Alive.
53. M. H., St. Mark's	31	1891	Malignant disease	Left ing. col.	No	Short	No	No	Upper & rectum	Died in 3 months.
54. J. R., Mr.	52	1891	Malignant disease	Left ing. col.	No	Medium	Yes	No	Upper	Alive.
55. T. A., G. N. H.	25	1891	Malignant disease	Left ing. col.	No	Medium	Yes	No	Upper	Alive.
56. E. S., G. N. H.	32	1891	Stricture and ulceration	Left ing. col.	Yes	Medium	Yes	No	Upper	Alive.
57. M. C., Mrs.	73	1891	Malignant disease	Left ing. col.	No	Medium	Yes	No	Upper	Alive.
58. T. H., St. Mark's	52	1891	Villous tumour of rectum and cancer	Left ing. col.	No	Medium	Yes	No	Upper	Alive.
59. L. H., G. N. H.	30	1891	Ulceration, stricture, and recto-vaginal fistulæ	Left ing. col.	Yes	Long	Yes	No	Upper	Alive.
60. G. D., G. N. H.	52	1891	Malignant disease	Left ing. col.	Yes	Long	Yes	No	Upper	Alive.

CHAPTER VII.

RIGHT INGUINAL COLOTOMY.

Right inguinal colotomy may be performed in the same way and by the same incision as on the left side; but at times it is wiser to make the incision lower down and nearer to Poupart's ligament. The cæcum, or the lowest part of the ascending colon, is the region to be opened. All difficulties may be met by the details of operations previously explained. The question of a spur can never arise.

Case I.—Mrs. H., aged 67, gave the following history, viz., that for some years she had suffered from constipation of a very obstinate nature, at times requiring strong purgatives to obtain relief. About six weeks before I saw her she had commenced to have an attack of obstruction, which was not relieved by enemata or small doses of castor-oil.

Dr. Aiken, whose patient she was, carefully examined the rectum and abdomen, but was unable to find any tumour or any indication as to where the obstruction was. Repeatedly injections were given with a long tube, and all varieties of purgatives were tried. These failing, belladonna in large doses was given for some time, and even electricity was resorted to without avail, only occasionally wind passing.

This state of obstruction continued for about a month, the abdomen becoming more distended, and then pain of a colicky nature began to set in, and two days before I saw her she began to vomit.

On August 2nd, 1891, I saw her, and found abdomen enormously distended and generally tympanitic. Tongue dry; pulse rapid and feeble; every now and then she vomited, only, however, the contents of the stomach. By her history it was evidently not a case of malignant disease very low down in the colon, as there had never been the characteristic diarrhœa, nor had blood or slime ever, as far as I could make out, been passed. By an examination, I was totally unable to discover any tumour or any difference in percussion to lead me to the position of the obstruction. From the history, however, viz., of about six weeks without any acute symptoms, I was convinced the obstruction must be in the large intestine, and probably rather low down, viz., about the sigmoid flexure. Accordingly, I determined to do a left lumbar colotomy in the hope of being above the disease.

The patient being chloroformed, I cut into the left loin, the incision being 3 inches. As the patient was very fat, quite 2 inches were cut through, until the muscles were reached. Not finding the gut at once, I concluded it had a mesentery. Accordingly, I at once opened the parietal peritoneum just sufficient to admit my finger; then I found the descending colon, knowing it from the longitudinal bands and appendices epiploïcæ, both of which could be distinctly seen. What was also important and interesting, it had a mesentery of medium length, so that I could not have opened it on its non-peritoneal surface had I attempted to. On drawing it through the opening in the parietal peritoneum, to my surprise I found it collapsed and empty, showing I was on the distal side of the stricture. Accordingly, I sewed up the parietal peritoneum with a deep suture, and also closed the lumbar wound.

After this the question was what to do. I soon made up my mind to perform a right inguinal colotomy. The patient was then placed on her back, and I made an incision about

2 inches long over the right inguinal region, on a level with the right anterior superior spine of the ilium, and about 1½ inches below it. On dividing the fat, muscles, and parietal peritoneum, I came down on the cæcum, and found it very distended, so that now I knew I was on the proximal side of the stricture. A sponge with a string was then introduced, while I sewed the parietal peritoneum to the skin wound. This was very difficult to do, on account of the fatness of the abdominal wall. However, with patience, I succeeded, although in some places there was great tension on some of the sutures. The sponge then being removed, I pulled the distended cæcum as well as I could into the wound, and very carefully with about twenty stitches secured it all round to the opening in the abdominal wall. I was very careful in this suturing to pass my needles only through the peritoneal and muscular coats of the bowel, so as not to allow of any chance of extravasation of fæces from my needle-holes. After careful suturing, I opened the gut, only making an incision about half an inch long, and clipping the edges of the gut and pulling them asunder so as to overlap the parts where the gut was attached to the skin. This I thought would give an additional protection against extravasation.

As soon as the gut was opened a quantity of liquid fæces and wind escaped. The patient bore the operation wonderfully well; and the next day, on visiting her, I found her quite cheerful and happy, temperature normal, and that she had taken plenty of liquid nourishment. The bowels from the inguinal opening had acted very fairly.

In about a week the lumbar incision was completely healed and the sutures removed.

Around the inguinal opening some of the sutures uniting the skin to the parietal peritoneum tore through, leaving a wound in places to granulate; but in five weeks' time all was healed, and the patient was up and out daily for a drive, the obstruction being entirely relieved.

At intervals a very small amount of fæces passed by the rectum, but the greater amount passed daily by the right inguinal opening.

Of course, there was no spur in a case like this, and what is important, there was no prolapse. What the obstruction was or exactly where it was, I do not know to this day. The patient is still alive and comfortable.

Case II.—In 1886, I was called to the country to see a gentleman, aged about 57, who gave the following history, viz., that he had rapidly lost flesh of late, and had been troubled with constipation at times. For the last fourteen days nothing had passed by the rectum. When I saw him he was evidently very ill. Face almost that of death. Pulse running; cold and sweaty hands and feet. Abdomen enormously distended, tender and tympanitic. There was no evidence as to the seat of the obstruction in the large gut; he was constantly vomiting. I examined the rectum, but nothing was to be felt. He had had enemata, but with no satisfactory result. It was obvious that if it was any good to operate it must be done at once. I told his friends what a very serious condition the patient was in, and said that, although there were but little hopes of recovery, yet there was just a chance of saving him, at all events of relieving him, by doing then and there a right inguinal colotomy. This they readily consented to. He was almost too ill for chloroform, accordingly I operated without it. I made an incision 2 inches long in the usual place over the cæcum, cut through the muscles, and rapidly opened the parietal peritoneum, and at once an enormously distended cæcum presented. This was carefully sutured to the parietal peritoneum and skin, and then the gut was opened and a quantity of flatus and some liquid fæces escaped, giving great relief. Really the only painful parts of the operation was the skin cut and the suturing, but the whole operation took a very short time. In a few hours a quantity of fæces passed and the patient wonderfully recovered; vomiting ceased, and he took plenty of nourishment and stimulants. Every day he improved, and promised to do well, but on about the tenth day after the operation, the nurse leaving the room for a moment, he got out of bed, and no doubt by so doing broke away some of the adhesions between the cæcum and the skin, for on the next day he died, with

evident symptoms of peritonitis. No post-mortem was allowed. I was very disappointed at losing the patient, after he had done so well for ten days, for he would probably have lived had not the accident of his getting out of bed happened.

Case III.—Catherine R., 72, was admitted into the Great Northern Hospital, on December 5th, 1888, and gave the following history, viz.: Had been subject to bad constipation for many years, and had not unfrequently gone ten days without the bowels acting. Had never vomited with the constipation.

The present attack, viz., on 25th November, was when she was at work as a monthly nurse, and she had to return home because of pain in the abdomen, the result of prolonged constipation. Took Ol Ricini ℥i, but was not relieved. The next day, 27th, was seen by a doctor, who ordered two pills, which caused great pain, but no action. She had an enema of Ol Ricini ℥i. This was repeated on the 28th and 29th, but with no result. These enemata were continued nearly every day until admission into hospital on December 5th, and had several large doses of jalap, but with no result. On December 1st, the doctor discovered a hard mass over the cæcum, and tympanitis all over the abdomen. There was great pain, this becoming much worse. The next day she was brought to the hospital. During the whole of this time she had never vomited. On admission she was very collapsed; extremities cold. Pulse small. Respiration chiefly thoracic. Tongue dry and glazed. Abdomen very distended, hard and tympanitic. There was nothing abnormal to be felt. Veins of abdomen distended. Per rectum a few small pieces of fæces could be felt. There was no stricture nor ballooning of the bowel. I saw her, and from the history of a swelling about the cæcum, and from the very serious condition of the patient, decided to make my incision over the cæcum, to introduce my hand into the belly, and if the stricture was not in the cæcum or about the cæcal valve, to open the small intestine at once from that wound. On arriving at the peritoneum, over the cæcum, I found it inflamed and

thickened, and on opening it a quantity of dirty brownish-yellow pus was evacuated. I then enlarged the inguinal incision downwards, and found a small perforation in the cæcum, from which fæces escaped. Accordingly the parietal peritoneum was fixed to the skin all around the abdominal wound. From the wound it appeared that there was no localized abscess about the cæcum, and thinking some of the pus might have escaped into the general peritoneal cavity, I decided to open the belly in the middle line, for the purpose of drainage and washing, if necessary. Accordingly, I opened the belly in the middle line, did not discover any pus, but found there were well marked signs of general peritonitis, as the small intestines were covered with lymph; accordingly the belly was washed out with hot water, some of the water escaping by the inguinal opening, showing that I was correct in thinking the abscess was not carefully blocked off from the general abdominal cavity, and a Keith's glass drainage tube put into Douglas' pouch. I found the large and small intestines greatly distended. The abdominal cavity was closed in the middle line, except where the tube was. The cæcum was carefully sewn up to the skin wound all around, and the perforation enlarged, and a quantity of fæces escaped. The operation took about an hour, and the patient bore it well, the pulse and breathing being better after the operation than before. Fluid was drawn from the Keith's tube about every two hours until 7th December. The fluid was dirty, and contained some blood and pus.

On the 7th December, the patient had a good night. No pain whatever. Had taken peptonized milk, brandy, and some Brand's essence. There had been no vomiting. The bowels had acted thoroughly through the inguinal wound. On the night of the 7th she complained of some pain, and was ordered opium, and vomited once. Bowels were open again. Pulse was small and slightly intermittent, and tongue dry, but skin moist; had had no more vomiting.

December 8th: She complained of pain about the epigastrium, and flatulence. The abdomen not at all tense or tympanitic, but rather distended, not at all tender on

pressure. A large mass of hard fæces was removed by the finger from the inguinal opening. Wounds quite healthy.

December 9th: Became restless and tried to get out of bed, and complained again of abdominal pain. Took well. Bowels acted freely four times; vomited a little twice.

December 10th: Not so restless. Weaker. Fæces had been running from the wound all day.

December 11th: Patient much weaker, and had a good deal of abdominal pain; no vomiting. Bowels open still very freely. Was given opium, and slept seven hours. Pulse weak, and began now to refuse food. No vomiting. Bowels loose.

December 12th: Evidently sinking. Retching a good deal, and tender about the abdomen. Wound healthy. Refused food entirely. No vomiting. Towards the end of the day the pulse became imperceptible, extremities cold; she died at nine o'clock. Temperature throughout had been normal or sub-normal until a few hours before death, when it went up to just 100°.

Post-mortem.—Signs of peritonitis throughout the whole abdomen. Peritoneum about cæcum was thickened; evidently had been chronically inflamed for some time. Small intestines covered with lymph; great intestine and cæcum highly inflamed and gangrenous in places. On the upper and outer surfaces were two perforations—one which had been enlarged and sewn to the skin to make the inguinal opening, the other, small, communicating with the abdominal cavity. Cæcum and colon greatly distended. At the upper part of the sigmoid flexure was a fibrous stricture, through which a large probe only would pass. No ulceration of colon at seat of stricture.

Case IV.—Christopher H., aged 49, was admitted into the Great Northern Hospital on January 12th, 1889. Gave the following history: Was never a strong man, but had never had any serious illness. Always suffered from indigestion and pains in the epigastrium. Had lost flesh very considerably for the last six months. Had had diarrhœa of a watery character for the last month. Prior to

that date bowels were irregular, mostly hard nodules of fæces passed at intervals of two days' duration. No sickness. Was at work on January 2nd; took to bed on January 3rd; was seen by Dr. Silk, January 4th, who found him with an anxious expression, greatly emaciated, abdomen uniformly distended, tympanitic gurgling in lower part, not particularly tender. In right iliac fossa, apparently at the edge of brim of pelvis, a tumour felt, the exact character of which could not be determined on account of tympanitis; but on examination per rectum it evidently was fixed to the right side of the pelvis.

On January 12th Dr. Silk sent him to the Great Northern Hospital. On admission, patient very emaciated, abdomen very distended and tympanitic; veins in iliac regions much distended. A hard, somewhat nodular, mass could be felt in right iliac fossa, near the brim of the pelvis. On percussion, universally resonant. Per rectum considerable ballooning. No ulceration or growth to be felt. Small amount of hardened fæces, very offensive odour. Tongue dry and glazed. Not knowing exactly the cause of the obstruction, or what part of the intestine it involved, I decided, after a consultation, to do a right inguinal exploration. Accordingly, under ether, an incision was made in the right groin, about 2 inches above Poupart's ligament. The peritoneum exposed and opened, the cæcum then presented, and was found to be considerably distended and coated with a layer of lymph, and some purulent fluid escaped from the peritoneal cavity. Small intestines also presented, and were found covered with lymph. The incision was enlarged upwards about another 2 inches, so that the hand could be introduced and the whole abdominal cavity explored, and then it was found that there was a large mass in the right iliac region, with coats of intestine adherent thereto. The lumbar glands were also considerably enlarged, and could be felt for some distance along the front of the spine. The cæcum was then aspirated, to make it more manageable, and the lower part of the intestine was sutured with four silk sutures, the parietal peritoneum being carefully included. It was noticed the cæcum did not refill with

flatus; and as the small intestine which presented was distended, it was fixed by a piece of silk passed through a good piece of its muscular and serous coats, so that it might act as a guide to it if it was necessary to bring it to the surface and open it at some future date. The parietal peritoneum was then carefully fixed to the parietes, and the cæcum at other parts was also fixed up to the wound. Operation took about three-quarters of an hour. The cæcum was not opened. The patient stood the operation well. That night there was some hiccough, but no vomiting, and the patient rallied well, and took milk and brandy freely. Slight pain in the right groin. Tongue moist. Pulse 116, and fairly good. Abdomen less distended.

On January 13th the gut, viz., cæcum, was opened, and a good deal of flatus escaped. Took fairly up to the evening, but then began to refuse food. Pulse in the evening rapid (130), later, running and compressible. Abdomen more distended and tense. No vomiting, but some nausea.

In the night of the 15th gradually became more feeble, and died.

Post-mortem.—Wound in iliac region quite healthy, the intestine being well attached to the peritoneum all round by lymph. There was no evidence of fresh peritonitis, but the whole peritoneum was thickened, as the result of a chronic peritonitis, evidently of long-standing. The cavity contained a good deal of whitish serum and flakes of lymph. On the right side of the pelvis was a hard malignant mass, to which a large portion of the lower part of the ilium was attached above, the whole of the sigmoid flexure being lost in it below and to the left; in fact, a large part of the small intestines and sigmoid were involved in a malignant mass, and communicated in many places one with the other. The mesenteric glands were enlarged, in groups, and felt hard. The mass was malignant, springing from the sigmoid and surrounding it, and involving the lower parts of the small intestine, and forced over towards the right of the pelvis.

CHAPTER VIII.

THE OPERATION OF LUMBAR COLOTOMY.

As was the case in my chapter on the inguinal operation, I shall discuss lumbar colotomy, both on the left and on the right side. However, right lumbar is far less frequently performed, and much more rarely required, than left lumbar colotomy, to which I shall mainly confine my observations.

By attention to certain rules, lumbar colotomy will not be found to be very difficult, but the not uncommon occurrence of accidents forces me to think that all surgeons are not sufficiently alive to the use of considerable precision in the operation, more especially when the bowel is undistended. This indispensable element of precision is often lacking in the directions given in surgical books on the subject.

Many surgeons commence the operation under the impression that it may be impossible to discover the colon, and even the best operators

have often experienced difficulties or failures in finding the gut. Indeed, the small intestine has been frequently opened by mistake. Knowing this, and having read Mr. C. B. Lockwood's valuable pamphlet on the development of the colon, and the abnormal positions it may assume, and from the experience derived from a case of my own, narrated at the end of this chapter, I resolved to attempt to discover the causes of these failures, and, what is more important, the methods by which they might be obviated.

In a previous chapter I have fully described the anatomy of the regions encountered in lumbar colotomy, but a little repetition may be excused. It will be agreed that, unless the operator sees one of the longitudinal bands, which are invariably and only found in the large intestine, the intestine should not be opened from the loin. We are aware that these bands are situated, one on the anterior surface, another along the inner part, and the third at the posterior aspect of the gut (see Fig. 4). It is this posterior band that is usually looked for, and generally supposed to be seen when the bowel is sought for in lumbar colotomy. Some authorities hold that these bands can be readily detected without opening the peritoneum, but this is only rarely the case. I have observed from an examination and dis-

section of over a hundred ascending and descending colons, that the bands are always more easily and distinctly seen when they are covered by the peritoneum, which makes them hard, prominent, and shiny; whereas, when the peritoneum is stripped off them, these characteristics are lost. However, in eight out of the hundred cases examined, one or two of these bands could be seen, but not very distinctly, on the posterior part of the intestine, although they were uncovered by peritoneum. When the peritoneum only covers about one-half or two-thirds of the circumference of the gut, it is generally reflected off the gut at the posterior margins of the longitudinal bands on to the walls of the belly. Thus the bands are not visible unless the peritoneum is stripped off; if an attempt be made to expose them, the peritoneum, owing to its being so firmly adherent to the bands, is frequently torn, and the abdominal cavity opened without the operator being aware of it.

I now turn to the various ways in which lumbar colotomy has been performed; the differences are in the direction of the lumbar incision, and in the way of fixing up the gut when it has been found.

Several years ago, a careful investigation of more than fifty dissections led my father to

the conclusion that the best incision from which the colon could be found was one with its centre quite half an inch posterior and midway between the anterior superior and posterior superior spines of the ilium, and midway between the last rib and the crest of the ilium.

1. Callisen has used a vertical incision. This is made over the point discovered by my father, and takes a vertical direction. The disadvantages are the limited length of the incision that is possible, and the difficulty of working down upon the gut.

2. The transverse incision of Amussat.

3. The oblique incision of Bryant.

These last two incisions are the best, for, if room is wanted in difficult cases, they can be enlarged.

When the gut has been found by any one of these incisions, it can be fixed in its place by various modes.

When the gut is distended and has to be opened at once, some surgeons pass sutures through it in the following manner. A suture is passed first through one lip of the wound, then across and through the distended bowel, and finally through the opposite lip of the wound. Another suture is then introduced about an inch from the first one, and is treated in a similar

manner. Next, the gut is opened, and the loop of the sutures is pulled out and divided. The four sutures thus formed are tied up, thereby securing the gut to the skin edges. A few additional stitches may be put in if they are required.

The gut may not have to be opened at once. Several methods of fixing it have been advocated.

Mr. Davies-Colley passes two hare-lip pins through the gut, so as to retain it in its place. The disadvantage of this method is, that flatus or even fæces may pass from the holes in the intestine made by the pins into the cellular tissue. Thus the object of waiting to open the gut is defeated; for the delay was for the purpose of allowing all parts to be glued up with lymph before opening, and for the consequent prevention of any chance of suppuration.

Mr. Davies-Colley has suggested an alternative plan. Instead of using the hare-lip pins, the gut may be held outside by a special ivory clamp, which prevents it from dropping back, but, at the same time, does not perforate it. If any such instrument has to be employed, this, no doubt, is the best.

Mr. Bryant merely draws the gut into the wound, and leaves it there unsecured. The disadvantage is, that the gut may slip from the

surface, and be very difficult to find when the time comes for it to be opened.

Mr. Howse recommends the holding of the gut in situ by fixing on to it two fixation forceps. These are made to catch on small folds of the muscular tissue, with just sufficient force to hold, but without causing sloughing. The forceps are placed about half an inch apart, and at right angles to the line of incision. They are laid flat on the skin, and are kept in position by broad strips of plaster until the bowel is glued up. When the gut is opened they are removed.

When lumbar colotomy is to be performed, the patient is turned on his side, with a firm pillow under the loin nearest the table. What I usually find to make a hard and firm pillow is a large sheet rolled up and tied together with bandages. The instruments employed are a knife, scissors, clips, retractors, and needles. The loin is cleaned; an incision is then made half an inch behind the point discovered by my father, and previously described to be midway between the anterior-superior spine and the posterior-superior spine of the ilium. Whether it be transverse or oblique, the incision should be 2 inches in length, not more, for this limitation obliges the operator to cut down exactly to the position in which the colon generally lies; whereas, if the

incision is 5 or 6 inches long, there is a risk of missing the gut. Its centre should be over the chosen spot, midway between the last rib and the crest of the ilium. Division being made of the skin and the cellular tissue—the latter of which is sometimes very abundant—the muscles are exposed, and may be rapidly divided until the fascia lumborum is reached. This is opened and the quadratus lumborum is exposed at its anterior edge ; in some cases the quadratus may require division. The edges of the wound are then retracted, and the fat which lies around the kidney and behind the fascia lumborum is torn through with dissecting forceps. After this, the gut, if it is distended and has no mesentery, will bulge into the wound. In straightforward cases, the fact that it is the colon will be shown by its being uncovered by peritoneum ; for if the peritoneum is opened, peritoneum will be seen surrounding the gut, together with the longitudinal bands. There will then be no uncertainty as to its being the colon. It is then brought to the surface and very carefully stitched with interrupted sutures all round to the skin wound. These sutures should pierce only the muscular coat, and should not in any way perforate the gut.

If the case is not very urgent, the gut can be

fixed in this manner, and left unopened for a day or more till it is all glued up with lymph. It can then be opened.

I am sure, from the anatomical researches narrated at the beginning of this chapter, that the cases are rare in which there is this absolute certainty of the actual presence of the colon without opening the peritoneum. I therefore at once proceed to explain what should be done if there are difficulties in finding the colon, or in

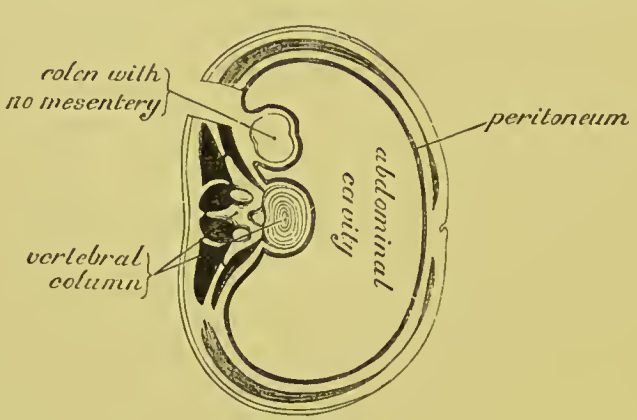

Fig. 29.

making sure that the part exposed is that piece of intestine.

The difficulties of the operation commence as soon as the transversalis fascia is opened. They arise from various conditions which are caused by the position of the intestine in relation to its peritoneal covering and length of mesentery. I will describe these conditions and explain the operative treatment necessary under each head.

I. What is supposed to be the general position (as shown in Fig. 29) is where the peritoneum covers only half or two-thirds of the circumference of the gut, leaving the posterior part uncovered, with the intestine bound down to the loin. According to Mr. Treves, this was the position in 74 out of 100 cases on the *right* side, and 64 out of 100 on the *left* side.

My own observations, in which I was assisted by Dr. Penrose and the late Mr. Stewart Pollock, at St. George's Hospital, showed 11 out of 60 cases on the *right* side, and 10 out of 60 on the *left* side; thus, by taking the percentage, $18\frac{1}{3}$ out of 100 cases on the *right* side, and $16\frac{1}{3}$ out of 100 on the *left* side.

From this it would appear that this so-called general position is less common than is popularly supposed.

When the intestine is in this state, and if a longitudinal band be seen, which must be uncovered by the peritoneum, there should be little or no difficulty in the operation. When, however, no bands can be seen, owing to the peritoneum covering them, the best distinction between large and small intestine is wanting. Therefore, knowing that the small intestine is frequently exposed by opening the peritoneum unwittingly, I refuse to run the risk of opening the small intestine

under the false impression that the peritoneum has never been opened at all, and that I am dealing with the large intestine. Hence, in this condition, if after exposing a piece of intestine I fail to see a longitudinal band, I *intentionally* make a small incision into the parietal peritoneum, and convince myself, by searching for and finding a band, that I am actually engaged on the large intestine. The posterior part of the intestine is

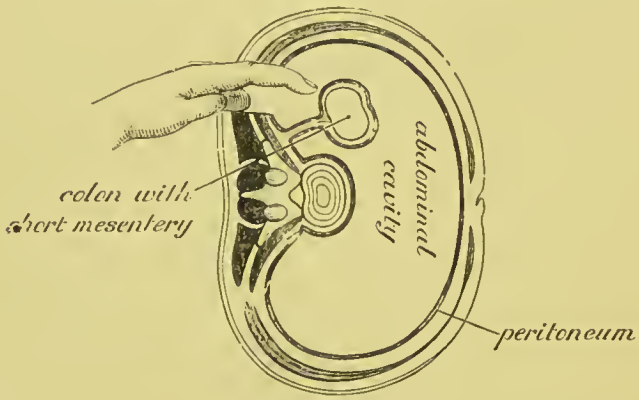

FIG. 30.

then drawn to the surface of the wound (the gut being pulled out as far as possible), and carefully stitched with interrupted sutures all round to the edge of the skin, the mucous lining not being perforated.

The intestine may be left unopened for some hours, or, if necessary, be opened at once, provided that it is carefully attached at every point to the surrounding edges of the skin-wound.

II. In Condition 2, as represented in Fig. 30, the colon is entirely surrounded by firmly adherent peritoneum, and has a comparatively short mesentery, so that it is absolutely impossible to reach it, or to see the longitudinal bands, without first opening the peritoneal cavity.

In this condition the ascending and descending colons have a mesentery of varying length.

According to Mr. Treves, it was in 26 out of 100 cases on the *right* side, and in 36 out of 100 on the *left* side.

My own observations show 49 out of 60 cases on the *right* side, and 50 out of 60 on the *left* side; the percentage therefore being, $81\frac{2}{3}$ out of 100 cases on the *right* side, and $83\frac{1}{3}$ out of 100 on the *left* side.

In cases falling under this second head, the operator should at first seek for the gut about the sub-peritoneal tissue, under the assumption that it is in its supposedly normal position; but should this search fail, all the loose pieces of fat must be sponged out of the wound. The peritoneum, at the anterior angle of the wound, should be deliberately opened (and the edges clipped) just sufficiently to admit the index-finger. This finger I pass towards the vertebræ, and then sweep it over the front of the kidney and the quadratus lumborum. The gut, although

it is in the position shown in Fig. 30, can be easily felt and hooked up, and the longitudinal bands be seen. I next open the peritoneum to the extent of the wound, and introduce a sponge, with string attached, to keep the intestine out of the way while the edges of the cut peritoneum are drawn up and sutured to the skin in the manner I adopt in inguinal colotomy. This entirely shuts off the cut abdominal muscles from the peritoneal cavity. Sometimes this stitching

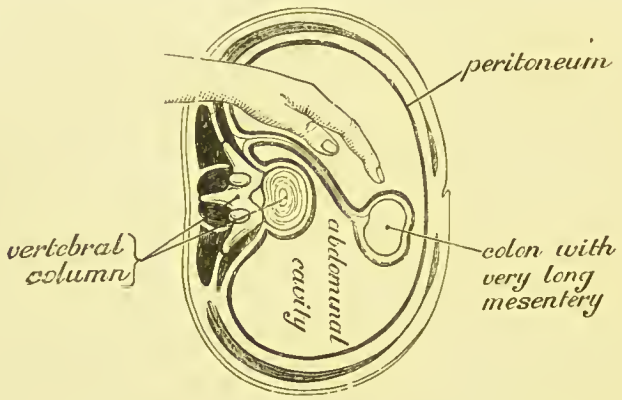

Fig. 31.

is not easy to do, either because of the depth of the wound, or from the firm adherence of the peritoneum to the abdominal wall. The rest of the operation is completed as in Condition 1. If the mesentery be long enough, a stitch may be passed through it, fixing it to the surface of the wound ; thus a good spur may be obtained.

III. In Condition 3, as shown in Fig. 31, the state of things in Condition 2 is much intensified

and the mesentery is very long ; thus the intestine, although it may rest in the loin, can so alter its position in the belly, that, when the operation is done on either side, it may lie on the side of the belly opposite to that in which the incision is made. This is the condition in which it has been said and supposed to be impossible to find the colon from the lumbar region.

If, after proceeding in the manner described under Conditions 1 and 2, I have failed to find the colon, I enlarge the external wound forwards and backwards sufficiently to admit the hand. I then open the peritoneum to a corresponding extent, and having well cleaned the hand, I introduce it into the abdomen. If it is the left colon that is to be operated on, I first pass the hand upwards towards the spleen and feel for the splenic flexure. Hereupon I draw the hand down the intestine until the piece opposite the wound is found and brought to the surface. Failing to find the intestine at its splenic bend, I pass the hand towards the rectum or across the abdomen (keeping the back of it in contact with the posterior aspect of the anterior abdominal wall) towards the hepatic flexure, and slip the hand along the large intestine and draw a piece to the surface. Of course I take care to

ascertain that this piece of intestine has the characteristic longitudinal bands. The presence of the appendices epiploïcæ may also show that the large intestine has been discovered, but they may be absent from the particular piece drawn out. By the use of this method I have never had any difficulty in finding the colon.

When the large intestine has been found, I command it with forceps that will not perforate the gut, and introduce a sponge to keep out the small intestines, which may prolapse while the wound is treated as follows.

At the anterior and posterior parts (if the incision is 6 inches long) 2 inches in front and 2 behind should be dealt with as in an ordinary case of abdominal section, by passing the sutures through the skin and peritoneum, so as to bring the cut peritoneal edges into contact. But at the middle 2 inches of the wound, where the intestine is to be brought up to the surface, the peritoneum should be sutured to the skin as described under Condition 2, and the operation be completed in the same way. In this third condition a good spur can and should always be made, and when the gut is opened, its prominent edges ought to be cut away in the manner described in the chapter on inguinal colotomy.

I must here mention that most of the details of these suggestions have been arrived at from

operations on the dead body ; for it has not yet been my fortune to come across cases in my own practice that required such treatment, although I have seen cases operated upon in which these methods would have been extremely advantageous.

When I first advocated the above lines of treatment, I expressed my surprise that in spite of the frequency of the operation of lumbar colotomy these details appeared to be so little known, or at any rate practised ; though I was inclined to believe that they must have occurred to, or been used by, some surgeons. Thus I was encouraged to break the silence on the way of finding or treating the large intestine from the loin. I am still confident that whenever I perform the lumbar operation I shall never have any fear of failing to find the colon.

There are other difficulties which may be encountered in the operation, but they are of trifling importance when compared with those that arise from the movements and relations of the intestine to its coverings.

An empty bowel is of course extremely difficult to find if the peritoneum is not opened, but it is easily discovered by the method I have explained. Unless that mode of dealing with the

gut is utilized, great trouble and unnecessary disturbance of the cellular tissue may result.

Perhaps, after the tissue has been pulled about and bruised, the surgeon who is afraid to open the peritoneum may do so by accident and thus find the gut. By my plan he will certainly find it. Unless the peritoneum is opened, either knowingly or unintentionally, the operation might have to be abandoned.

A very fat loin may be a source of trouble, and those surgeons, who still wish to avoid opening the peritoneum when it ought to be opened, may find it expedient to enlarge the incision considerably. This necessity of enlarging the external wound will be spared those who follow my plan, for as soon as the peritoneum is opened the gut is easily found, and can be treated in the way thought best.

In these cases, not only the subcutaneous but the sub-peritoneal tissue may be greatly increased in amount; thus, if the peritoneum be not opened there may have to be a difficult, tedious, prolonged, and unnecessary search in this tissue for the posterior part of the gut, provided, that is to say, that the gut is in its place and uncovered by peritoneum.

I have already discussed the question of the meso-colon and abnormalities of the colon. It is

possible that in rare instances the colon might be congenitally absent from the side operated upon; then, if the peritoneum has been opened and a good search been made with the hand in the belly, and it is found impossible to drag down any other part of the colon and fix it to the loin, I should close the lumbar wound and perform a colotomy on the other side of the body.

Left Lumbar Colotomy.

Case I.—Mr. F., aged 45, a fat man, was admitted into St. Mark's, January 3rd, 1890, with the following history: That for about a year he had had great difficulty in getting the bowels to act, often having attacks of constipation of a week's duration, only relieved by strong purgatives. He had never passed any blood or mucus.

For the last six weeks the bowels had only acted slightly at intervals. The last week he had become greatly distended, and had had for the last few days a great feeling of sickness. He had been examined by a medical man, but the nature of the trouble was not made out. He stated he had not lost flesh.

When I saw him he was greatly distended, abdomen tympanitic, and had a doughy feel, evidently full of fæces. His pulse was small and rapid. Aspect abdominal. On examination of the rectum, it was ballooned, and on pressing deeply the hand into the buttocks I could just feel a hard mass at the commencement of the sigmoid flexure. It was far too high to be able to make it out definitely, but it was obvious that that was the seat of the growth, the cause of the obstruction.

The same day I decided to perform left lumbar colotomy. The patient took the anæsthetic very badly, so that I performed the operation as quickly as possible. I cut rapidly through the skin and muscles, and exposed the fat of the loin. The patient being very bad, it was not a case in

which much time was to be lost in hunting about in the fat for the large intestine. Accordingly, I at once opened the parietal peritoneum, passed my finger through the small opening into the abdominal cavity, hooked up the descending colon (which I immediately recognised by its longitudinal bands and appendices), and pulled it through the small opening in the peritoneum, which it completely plugged. The anæsthetic was then left off, and the patient recovered.

I then began to take time, and very carefully sutured the gut to the skin at every possible point in the manner I have already described. By the time I had finished the patient had quite recovered from the anæsthetic. The gut was then opened by a small cut at its posterior part, and a quantity of wind escaped, and in a few hours fæces began to pass.

In two days' time the opening in the gut was enlarged, and in a week's time all the sutures were removed. The patient made a rapid recovery, and left the hospital.

He lived rather more than ten months after the operation. Of course there was no spur; but from the complete block in the rectum no fæces passed per anus. No post-mortem was made.

Case II.—The Rev. S., aged 70. I first saw him in March, 1890, and found he had well-marked malignant disease of the rectum, of a hard variety; not much pain, but he was greatly troubled with constant diarrhœa, but never got rid of any well-marked fæces, only passing fæcal stained fluid with blood and much mucus. The opening in the cancer was very small, so that I could not pass my finger into it.

With this condition and symptoms, I strongly advised inguinal colotomy. I heard no more of him until July, 1891, when I was sent for by his doctor, Dr. Gooding, and I heard the tale, that of course he had been frightened by my suggesting inguinal colotomy, and had at once consulted Count Mattei, who had treated him with globules, so-called anti-cancero, and lotions.

About a week before I saw him the obstruction had become complete, and for the last three days he had

been in intense pain, abdomen enormously distended, and he had been frequently vomiting. The morning I saw him the vomit was fæcal.

When I saw him on July 13th he was almost pulseless, the abdomen distended and tender, cold hands and feet, face abdominal, and an intense aspect of agony; tongue dry and dirty, and constant vomiting. I at once told his friends I was afraid I was too late, but would try. Accordingly, I performed left lumbar colotomy. He was very thin, so that through a 2-inch incision the muscles were rapidly divided, and the sub-peritoneal tissue reached. I looked for the gut, but not easily finding it, I opened the parietal peritoneum just sufficiently to pass my finger in, and found the large intestine enormously distended, with a short mesentery. I pulled the gut through the small opening in the peritoneum, which it completely blocked. Very carefully, in many places I stitched the gut to the skin wound all around, taking care in so doing not to perforate the gut. When this was done, and every space blocked off, I opened the intestine, and instantly I was almost flooded with fæces.

In a fortnight all the sutures had been removed, and the patient was quite well.

About two months after the operation I saw him again. The lumbar opening had slightly contracted. This I enlarged by nicking the angles of the wound. As in most of these lumbar cases, there was no well-marked spur, so that some of the fæces passed by the side, but some also passed into the rectum, and occasionally caused pain and distress. I directed him to syringe the rectum out daily, but still he was annoyed by motion passing to the rectum; of course, all fear of obstruction was at an end on account of the opening in the loin.

Case III.—Mrs. S. was admitted into the Great Northern Hospital in the following condition, viz., almost dead with obstruction of about six weeks' duration. Abdomen enormously distended, tender, and tympanitic. Aspect that of death, almost pulseless. Vomiting constantly, tongue dry and black. The growth was high up in the rectum, so that when under ether I could only just feel the commencement of a

malignant stricture. It was one of the too late cases, and it was quite a question whether an operation should be attempted; but, as in all these cases I think it right to give the patient a chance, even if it be ever so small, I decided to do left lumbar colotomy. It was done in the usual way, the gut soon found, and, fortunately, in this case uncovered by peritoneum. During the stitching of it to the skin wound it burst, and a great quantity of fæces escaped. The patient was freely dosed with brandy, and put to bed, and appeared to revive a little; certainly, the vomiting ceased, and the bowels acted most freely by the lumbar opening. However, on the next day she died. At the post-mortem it was found that the lumbar wound was secure, that is to say, the peritoneum was unopened; but about 4 inches above the lumbar wound the gut had given way on its peritoneal surface, and fæces had leaked into the peritoneal cavity. No doubt this had taken place from the over-distended and rotten condition of the gut, and very likely was caused by the slight dragging I had to employ to secure the gut to the lumbar wound.

Had this patient been operated upon before the distension had become so acute, and consequently the gut so rotten and friable, there is no reason why she should not have recovered.

I have not so much to say on the after-results of lumbar colotomy as I had on the after-results of inguinal, for, from the reasons previously assigned in my discussion of the choice of the operation, I have not done nearly so many cases of the lumbar operation. The after-results, therefore, will be what I have seen happen in the cases of other surgeons, rather than my own personal experiences.

Prolapse is a very important matter. A small prolapse of the mucous membrane alone is of

but trivial consequence, but what I refer to is a procidentia of the gut through the loin opening. I have frequently seen this condition. It may take place not only from the upper, but also from the lower portion of the gut, and even from both portions together (see Figs. 32 and 33).* The upholders of the lumbar as against the inguinal operation, assert that this

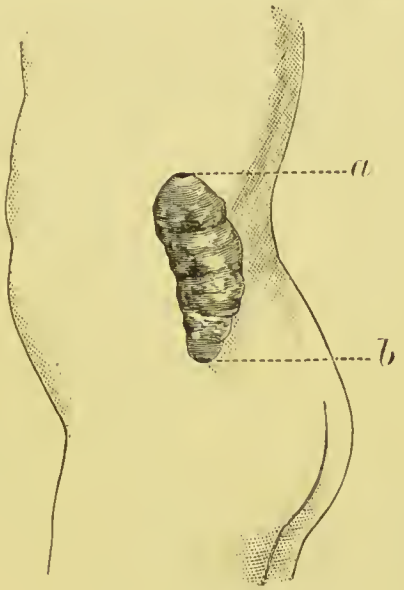

Fig. 32.

procidentia rarely occurs; but I have seen several cases of it (the figures are instances), and it is quite as common as after inguinal colotomy. Its occurrence, therefore, is as much a drawback to the lumbar mode, as it was to the inguinal method, till a supplementary operation was devised.

* These woodcuts have been copied from photographs of cases.

Spur.—Another disadvantage of lumbar colotomy is the absence of a spur; for as a rule it is difficult to pull the gut sufficiently well out of the wound to make a good spur, and, further, unless the mesentery is of a medium length or long, it is not easy to make use of the mesenteric stitch. Moreover, some surgeons, I fear, do not sufficiently appreciate the importance of the mesen-

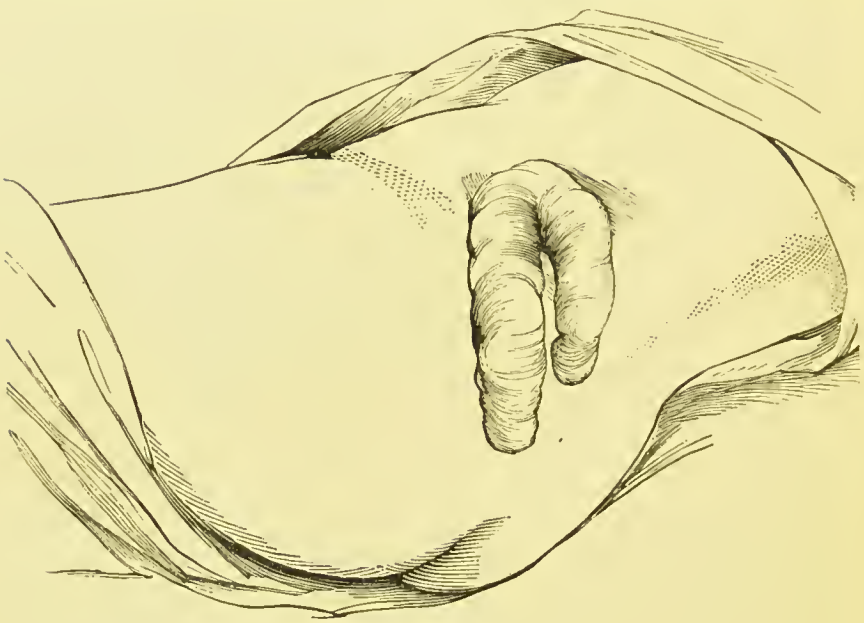

Fig. 33.

teric stitch, and do not trouble to make one, even when they can. As I have pointed out in a previous chapter, unless a spur is made, a fæcal fistula is formed instead of an artificial anus. Consequently, in place of all the fæces passing by the loin, a certain amount passes beyond the opening to the rectum, and distresses

the patient greatly. The patient will possibly blame the surgeon for this result, for he may have been assured that after the operation no more motion would pass by the rectum. He will be miserably disappointed, then, if motion does pass beyond the lumbar opening, and by irritating the growth causes pain and bleeding, and, perhaps, even a continuance of the troublesome diarrhœa. If the operation has been done to relieve the above distresses, rather than any obstruction, such after-results from the neglect to make a spur will, I hold, render it a complete failure, and the patient may not unreasonably hold the same opinion.

The anatomical arrangement of the colon, as compared with that of the sigmoid flexure, and the manner in which the operation is usually performed, make it certain that the passage of fæces below the opening is a far more frequent cause of distress after lumbar than it is after inguinal colotomy.

The above are more or less remote discomforts. I now turn to certain discomforts, or even calamities, that may occur within a short time of the operation.

Cellulitis is a not at all uncommon consequence of lumbar colotomy, and is naturally most frequent when the gut has to be opened at once. There

are several obvious reasons for this: first of all, the depth of the tissue, and the looseness of the structures which have to be divided; secondly, from its fixed nature, and from the depth of the wound, it is often impossible to fix the parietal peritoneum to the skin, and thus shut off the various planes of cellular tissue, as can be done in the inguinal operation. Consequently, as soon as fæces pass these planes, they become inflamed and suppuration sets in, frequently extending backwards to the spine, and even at times burrowing amongst the abdominal muscles in front.

I have seen a patient recover from the immediate effects of the operation, but die in a week or two solely from this extensive, sloughing cellulitis. There is less chance of this happening if the gut is not pricked or opened, for, say, twelve hours or two or three days, for by that time the cellular planes are glued off by lymph, and such a calamity is then of rare occurrence.

Peritonitis is another after-result. As far as I am aware, this never takes place unless the peritoneum has been opened, and fæces have been allowed to run into it. It is most usual when the surgeon has unwittingly opened the peritoneum, stitching the gut to the skin in a rather careless manner, and then opening it, some of the fæces thus escaping into the abdominal cavity.

If the peritoneum is intentionally opened, the operator can take great care to close off the peritoneum when the gut comes through it, and further, can be especially attentive in sewing the gut thoroughly all round to the edges of the skin wound, so as to leave no space through which fæces can find their way into the belly. If this is done in the manner I have already described, there is very little risk of peritonitis, even if the gut has to be opened at once.

Exhaustion, erysipelas, eczema, and so forth, may supervene on colotomy, as they may do on any other operation.

Right Lumbar Colotomy.

In the performance of right lumbar colotomy, exactly the same details must be pursued as in the left side. Precisely the same difficulties may be encountered, and the same after-results may happen. A repetition of them is, therefore, unnecessary.

I may remark that on the right side there is usually a fair-sized mesentery to the colon, so that it is even more necessary to be careful in operating, and to guard against any after-prolapse. It is not so imperative to make a good spur, for there is a considerable distance between the

opening and the rectum. Moreover, the growths or pressure upon the colon, whether transverse or left lumbar, are not in the same ulcerated, painful condition as they are in cases of rectal cancer. As a rule they are of a hard, slightly ulcerated, and very contracting variety, which leads rather to obstruction than to pain, bleeding, discharge, and so forth.

Right Lumbar Colotomy.

Case I.—J. H. A few years ago I went to Hastings with my father, to operate upon a patient, aged about 50, who gave the following history, viz., that for some years he had had repeated attacks of constipation, often lasting for about a week, and only relieved by strong purgatives. About five weeks before we saw him he had one of these attacks, and had been treated with all kinds of purgatives, belladonna, etc., without effect, only a little wind passing at times, but no motion. The last week he had become very distended, and had suffered from general abdominal pains. He could not fix on any one point in particular. The last two days he had vomited several times, and was evidently very ill. He stated he had never passed any blood, nor had any slime ever come away with the motion. A rectal examination revealed nothing. The abdomen was generally distended and tympanitic, and examination revealed no hardness or growth. This being the case, we decided to do right lumbar colotomy. It was before the days of right inguinal colotomy, so it was determined to open the large intestine as high up as possible, so as to be sure of being above the cause of the obstruction, which from the history appeared to be in the large intestine.

The patient being etherized and placed on the left side, an incision in the right loin was made in the same way as is done in the left lumbar operation. The muscle being divided, the cellular tissue was very carefully explored, but no gut was found; this being the case, the incision was prolonged

forward in the hope that the gut might be more anterior than is usual. In hunting about at the anterior part of the incision, the peritoneum was unknowingly opened, and a piece of gut presenting was at first thought to be the large intestine, but on examination proved to be the small gut. A very careful search was then made in the abdominal cavity about the right loin, but every piece of gut drawn into the wound proved to be small gut. This was very disheartening, and the question was what to do; at last I decided to pass my hand into the abdominal cavity, in order to find the large gut. This I did, and on passing it straight across the abdominal cavity, felt what I thought to be the large intestine, and on pulling it from the opposite side of the abdomen, found to my delight that it was the large gut, and had evidently fallen over to the left side of the abdomen, this being possible from the fact that it had a very long mesentery. The gut and the wound were then very carefully stitched up and the intestine opened, and fortunately, for the first few hours flatus alone escaped. The patient did very well; all the sutures were removed in about a week's time, and he lived more than eight months, the bowels acting daily from the right lumbar opening. On his death a post-mortem was made, and a small annular malignant mass, completely blocking the gut, was found about the hepatic flexure. This was a most interesting, and at the same time trying, case. It set me thinking as to the causes of some surgeons failing to find the colon; and from these thoughts, aided by many post-mortem examinations, I was led to arrive at a solution of these difficulties, which was first published by me in the *British Medical Journal*, 1887.

I have not performed any more than this one right lumbar colotomy, as right inguinal soon came into vogue, which I consider, from many points, superior to, and certainly easier than, the right lumbar operation.

CHAPTER IX.

TRANSVERSE COLOTOMY.

In an earlier chapter I discussed the anatomy of the parts involved in this method of colotomy. It is not frequently performed, and I have met with only three cases of it—one in my own practice, one in Mr. W. H. Bennett's, and a third under the care of Mr. G. R. Turner, both of St. George's Hospital.

I do the operation in the following manner: An incision is made through the skin, and the left rectus abdominis is exposed. I then separate its fibres with the fingers, and incise the posterior part of its sheath, formed by the divided tendon of the internal oblique muscle. That being done, the sub-serous areolar tissue is exposed, and the peritoneum picked up and divided. The parietal peritoneum is then stitched to the skin all round the wound, as in inguinal colotomy, and for the same reasons. In some cases the great omentum presents. This must be pushed

upwards towards the stomach, and the large intestine is then found, and recognised by its longitudinal bands. The intestine is next pulled forwards and fixed well outside the abdomen ; if a spur is required, the mesenteric stitch is used as in inguinal colotomy. The gut is then secured to the skin in several places by passing sutures through the peritoneal and muscular coats ; great care must be taken that the gut is not perforated anywhere, for, if it is, gas or fæces might escape at the prick-holes, and peritonitis might result.

In my case I used as an exploratory incision, in the first instance, the incision which is always made above the umbilicus. It was, therefore, made large enough for the introduction of the hand into the abdomen, so as to discover where the obstruction was. When this has been ascertained, and a transverse colotomy has been decided upon, the wound must be closed with the exception of the upper 2 inches, the lower part being brought together as in an ordinary abdominal section. The upper 2 inches are treated as in inguinal colotomy, the parietal peritoneum being stitched to the skin, and through these upper 2 inches the transverse colon is brought and fixed into that space. Unless the case is a very urgent one, it is wiser not to open the gut until about two days after it has been fixed up, for by that

time all communication of the wound with the peritoneal cavity is completely glued off by lymph. The gut is opened by scissors in a vertical direction. Some days or a week later, if the proceeding is deemed necessary, any excessive portions of the walls of the gut may be removed on a level with the skin.

I have not yet become acquainted with any difficulties in the operation. I imagine that there might be some little trouble in finding the colon, though I cannot understand how that could very well be.

In this operation, as I said with regard to the right lumbar and the right inguinal modes, there is not much necessity to make a very perfect spur, except in cases in which the large intestine communicates with some viscus, such as the bladder. Then, indeed, a spur is most necessary to prevent any fæces passing beyond the transverse colotomy opening into the lower part of the gut, and thus through the fistula, say, into the bladder. Were this to happen, the purpose of the operation would be entirely defeated.

Prolapse might happen, but I have not yet seen it, and I do not think it would be so likely to occur as in other places, for the transverse colon is in a way fixed at its hepatic and splenic flexures, and would thus tend greatly to prevent

any prolapse of the gut through the transverse opening.

The complications I have alluded to in my description of the other colotomies might arise with the transverse operation too. I need not repeat them, but a due recollection of them will enable operators to be on their guard.

Case I.—Keziah J., aged 40, admitted under my care into the Great Northern Hospital, 8th July, 1891. Gave the following history, viz. : That for the last year she had had great trouble in getting the bowels to act, often being constipated for ten days together, and at times suffering great colicky pains ; had never passed any blood or slime. The present attack commenced about four days before admission, when she was taken ill with pains in the right side of the abdomen and sickness. She continued to get about, but the pain became very severe, was griping in character, and became general, starting from one side of the abdomen, and traversing it to the other side. The sickness became frequent. Bowels could not be moved, nor was there any wind passed, and the abdomen began to swell gradually. She was seen by a doctor, who ordered aperients, but the only result was to increase the pain and give no relief, and the vomiting became more frequent, and was of a greenish hue, but not offensive. On admission she appeared an emaciated delicate woman ; expression showed she was in great pain, tongue moist and coated, pulse small. Was lying in bed on her back, with legs extended. Said the pain was chiefly on the right side of the abdomen, but she was generally painful all over the belly. Abdomen was distended, but appeared to bulge more on the right than on the left side. Palpation was not attended with much pain, but was difficult, owing to the tenseness. There was no lump to be made out. Nothing was to be felt by the rectum, and it was not ballooned.

On admission, an enema was given of ʒiii. of olive-oil, and

returned only just coloured by fæces, and then enema with the long tube was given, but returned in 20 minutes unaltered.

The next day, July 9th: The patient was relieved of her pain by opiates, vomited three times, had passed no flatus, and to-day could be seen distinctly a great deal of peristalsis of the small intestines. There appeared to be some flattening of the left hypochondriac region, as if the descending colon was not distended. At 3 p.m. on that day I was sent for, and from the above symptoms and examination, decided to do a median abdominal exploration above the umbilicus, as there was no certainty as to where the obstruction was, except that it was somewhere in the larger intestine, or at the ileo-cœcal valve. An incision about 3 inches long was made, and afterwards enlarged downwards for about 5 inches. On opening the abdominal cavity, quite a pint of serous fluid escaped. Intestines did not seem very distended. The hand was introduced into the abdomen, and passed towards the rectum, and traced up along the sigmoid gut, which was collapsed, and so the descending colon reached, when there could be felt a hard annular ring, all the gut below it being collapsed, the intestine above it being distended. This mass firmly fixed the gut to the loin, so that there was no chance of bringing the nodule to the surface to see it, but feeling was enough. There was the stricture, and evidently malignant in nature. I then passed my hand along the transverse and ascending colon, to make sure there was no other stricture, but these portions of gut were well distended. I thereupon decided to do a transverse colotomy, as the growth was just over the seat, and rather higher than the gut could be opened from the left loin. Accordingly, the transverse gut was brought up into the wound, and held there while the lower part of the exploratory opening was closed, as in an ordinary abdominal section. In the upper 2 inches of the wound the parietal peritoneum was sewn to the skin, as I have already described, the transverse gut being fixed there by sutures passing through its muscular and serous coats only in several places. Antiseptic dressings were applied. The patient

stood the operation very well. The next day, viz., 10th July, she slept well, but at times complained of wind in the abdomen; was not at all sick. Temperature normal, pulse 100. Only had a little milk and brandy. In the afternoon the wound was exposed, and the gut opened with scissors, a very small hole being made, and a quantity of wind at once escaped, and some fluid fæces. Before the gut was opened, the lower part of the wound, viz., the abdominal incision, was covered with wool soaked with collodion, so as to protect it. The patient was very much relieved, and slept well after.

11th July: Temp. normal, pulse 90. Tongue moist, and she began to take food well. The belly was soft, but slightly tender on the left side. Some clips had been applied to the cut on the gut when the fæces had ceased coming, so as to prevent the lower wound being fouled. These on this day were removed, and a very free liquid motion and flatus passed, irrigation at the time of evacuation being freely employed. After the fæces had ceased running, the wound in the transverse gut was enlarged.

14th July: Pulse 96, temp. normal. Patient said she felt very well. No pain, only slight tenderness in the left side of the abdomen; no sickness. Liquid fæces escaped in large quantities from the opening. Took food well. She remained in a comfortable state, and at first appeared to put on flesh, but then began to rapidly waste, and a note on 16th of August was as follows: Patient wasting gradually. Chief trouble in the constant liquid action of fæces from the transverse opening. The opening had completely healed, and admitted the little finger into the gut. The patient, feeling well, was allowed to get out of bed for a few hours in the day. She took very little solid food. Had no pains in the abdomen. Temp. normal. Drugs did not control the liquid condition of the fæces. The abdomen was becoming markedly emaciated; no tenderness or pain even on deep palpation. No evidence of ascites. Since the operation nothing had passed per anum.

1st September: Patient very weak, greatly emaciated, tongue clean. Took very little nourishment. Liquid fæces

constantly escaped. No lumps to be made out in the abdomen; no evidence of any peritonitis.

9th September: Patient weaker, and sickness set in, so that she was unable to retain any nourishment. No tenderness or distension of abdomen. Bowels from opening acting freely. Temp. normal; that evening she died.

At the post-mortem was found a scirrhus-like mass in the descending colon, completely blocking the gut, and, to our surprise, in the left iliac fossa was a sponge, covered in lymph.

No evidence of any peritonitis about the abdomen.

The great interest in this case is the fact that with a transverse colotomy she lived from July 9th to September 9th—two months—and at the same time lived for that period with a sponge in her abdomen, and that that sponge in no way caused her death, and the only symptom she complained of was a little pain in the left iliac fossa for the first two days after the operation. It is needless to say after every abdominal operation I always have the sponges counted, and generally even count them myself. On this occasion I did not, but distinctly remember asking if they were right, and on this occasion must have mistaken the reply the nurse gave me; and so a sponge was left in the abdomen for two months, and did not in any way cause the patient's death, as the above notes will show.

Case II.—A. B., aged 26, was admitted into St. George's Hospital, August 1st, 1891, under the care of Mr. W. H. Bennett, who has kindly allowed me to publish the notes. Her history was that some years back she had great pain in the left side of the abdomen; a swelling formed, which burst, and discharged a quantity of pus. Soon the left thigh began to contract, and when admitted into St. George's was at a right angle with the pelvis. At the same time, she had a large sinus about the left anterior inferior spine of the ilium, from which exuded a quantity of pus, and at times fæces and flatus. By the rectum nothing abnormal was to be made out. There was no disease of the spine or sacro-iliac joints. Under ether the leg was straightened, and extension applied, and in a short time the leg

nearly regained its straight position. When the girl improved in health, Mr. Bennett thoroughly explored the sinus, and laid it open freely, hoping by so doing it might have a chance of contracting up; and so it did to a great extent, but not entirely. On two occasions there was severe hæmorrhage from the sinus, which was arrested by pressure. Accordingly, in order to prevent this hæmorrhage, which was evidently caused by fæces passing into an abscess cavity, Mr. Bennett decided to do a transverse colotomy, choosing this rather than inguinal or lumbar; 1st, because inguinal was quite out of the question, as the sinus was only about an inch below the position of an inguinal opening; and 2nd, in preference to lumbar, because of the difficulty of making a good spur in that position, and also on account of the probability of extension of inflammation to the gut in the lumbar region. Therefore, transverse colotomy was done, the abdomen opened above the umbilicus, the parietal peritoneum sewn to the skin, a stitch passed through the transverse mesentery, so as to make a good spur, and in many places the gut secured to the skin edge by sutures passed only through the muscular and serous coat. The patient did well, and in a few days the gut was opened, and the edges removed on a level with the skin; there was a good spur, and double-barrelled opening. From that date fæces passed only by the transverse opening, none by the rectum.

After the colotomy the patient improved, and left the hospital very much relieved, and probably cured later on by the fact of having colotomy done, which prevented any possibility of the abscess (evidently connected with the colon) being irritated by the constant passage of fæces into it.

Case III.—Amelia C., aged 24, was admitted into the St. George's Hospital, 1890, under the care of Mr. G. R. Turner, who has kindly allowed me to publish the case. The history is as follows, viz.: A year before, after the birth of a child, she began to have pain in the lower part of the abdomen, and in a little while she passed motions by the vagina, an abscess having previously burst and dis-

charged by the vagina. On examination, the uterus was found fixed slightly to the left of the pelvis, and a mass was discovered behind that organ, and extended across the brim of the pelvis. In August 1890, after considerable bladder pain and trouble, it was noticed that motion also passed by the bladder, and that when Condy's fluid was injected into the rectum, some of it passed by the bladder. On examination of the rectum, nothing abnormal was to be made out. A consultation was held, and it was decided that an inguinal colotomy should be done, so as to cut off any possibility of fæces passing into the bladder, and so get it to heal, or, at all events, to relieve the severe pains. In August, Mr. Turner commenced the operation of left inguinal colotomy, but on coming down on the sigmoid flexure, found it so matted to the pelvis and small intestines that it was impossible to bring it to the surface; he therefore closed the abdominal wound. This soon healed, and she went to the country. In October she was admitted again into St. George's, as she was still troubled with the bladder, the urine being very foul, and motion mixed with it, and she had frequent attacks of great abdominal pain. The bladder was washed out daily. In December, 1890, another consultation was held, and it was advised that left lumbar colotomy should be done; and, on January 1st, 1891, Mr. Turner operated, and kindly asked me to assist him. The left loin was cut into, and a hunt made to find the colon without opening the peritoneum. This was impossible. Accordingly, the peritoneum was opened, and then the descending colon at once felt and seen, and was found to be thickened and inflamed, and was with great difficulty brought to the surface and fixed there. In four days' time the gut was opened, and later on, fæces passed. The lumbar wound healed up soundly, but at a later date it was found that there was no spur, nor was it possible at the operation to make one, on account of the indurated and bound-down condition of the gut. So, although most of the fæces passed by the loin, still, whenever they were liquid or semi-solid, a great deal passed to the rectum, some passing into the bladder and some per anum. The patient was somewhat relieved, but at times was greatly distressed by some of the motions getting into

the bladder, causing pain and irritability of that organ. On June 2nd, 1891, Mr. Turner had another consultation, and at it suggested doing a transverse colotomy, which was the first time I had ever heard of such a procedure. This was agreed to by his colleagues, and carried out on 18th June. An incision about 4 inches was made in the linea alba above the umbilicus; the peritoneum, being opened, was sutured to the edges of the skin. The transverse colon was easily found, and was quite healthy. It was pulled into the wound, and fixed there by a suture passed through the mesentery, and additional sutures around the gut, fixing it to the skin. By the mesenteric stitch a good spur was obtained. The gut was just snipped to let out wind, as the patient complained of distension. A few days later, Mr. Turner freely opened the gut, and removed some of the walls. There was a good spur. From that date fæces only passed by the transverse opening. Occasionally a little pus passed by the lumbar orifice, which was now only a sinus, having so greatly contracted. The girl greatly improved, and lost her pain for a time, but on and off she had great pain in the lower part of the abdomen. On October 7th, although the fæces all passed by the transverse colotomy, it was noticed that some of the urine passed by the lumbar opening, showing that there was still a communication with the colon and bladder.

CHAPTER X.

AFTER-TREATMENT OF CASES.

This chapter will contain a detailed and careful description of my mode of after-treatment, *i.e.*, what I do after the operations are completed. With all the forms of colotomy, namely, left inguinal, left lumbar, transverse, right lumbar, and right inguinal, the treatment is alike, and, allowance being made for the different circumstances, what is said of one applies to all.

As soon as the operation is completed the patient is put back to bed, lying on the back, with the head low and a pillow placed under the knees. This position is the best in all the modes of colotomy, even when the gut has had to be opened at once. My patients are allowed no opium at all, unless it becomes absolutely necessary; the conditions for this necessity are very great pain, any restlessness, or severe purging. As a matter of fact, opium is rarely required.

For the first twenty-four hours little food is given, a small quantity of Brand's essence or of soda and milk being the best. The patient may sometimes obtain great relief by being allowed to wash out the mouth with a little weak tea.

Ice I have never given, for it only fills the stomach with cold water and tends also to increase the thirst. If, as rarely happens, the patient becomes faint, brandy and water may be given.

When patients are visited the last thing in the evening, there are many points to be noticed, attention to which may greatly relieve them and ensure them a good night's rest.

Pain in the back is frequently complained of; this may be assuaged by patients being allowed to turn on to the side. If the colotomy has been left inguinal or left lumbar, they may be turned on to the right side; if right inguinal or right lumbar, on to the left side. I have the following reasons for not allowing them to be placed on the side on which the colotomy has been performed. The intestines or omentum may fall against the opening, and may, if the stitching has not been very close, find their way out between the wound and the stitched-up gut. I have known this to happen. Again, a wound which has only recently been glued by lymph

may be broken open by this pressure of the intestines upon it.

If there is any stuffiness in the chest, as is common with old people, I have patients propped up in bed at once, so as to relieve their lungs. In this way I have several times probably prevented attacks of bronchitis from coming on.

If there is much distension from wind, and consequent distress, or even tympanitis, I loosen the bandages; if this does not give relief, the dressing may be removed, and a small puncture with a lancet made in the gut so as to allow of the exit of flatus.

After these operations urine can usually be passed, and a catheter is rarely needed. Still the point is an important one, and should always be inquired into.

If the pain be severe and of griping character, or if the patient be restless, I then order opium, usually in the form of liq. opii sedativus, twenty minims every four hours. I prefer this to morphia, for it acts directly on the intestines and is more effectual in diminishing peristalsis.

The above are the points to be attended to on the night of the operation.

The next day, if the patients are comfortable, they are left alone, the dressings not being disturbed. A little more soda and milk is now

given, and they can be permitted to take beef-tea ; but a spare and liquid diet is still maintained.

The second day after the operation the dressings are removed and the gut is opened. The gut will then be found to be covered with lymph, which, if green protective has not been used, will have grown into the gauze dressings, and will render them hard to remove.

As soon as the dressings are off, the gut is secured with a pair of toothed forceps, and is snipped into with scissors. When a hole is made, the scissors are introduced into the gut, which is freely opened for, say, $1\frac{1}{2}$ inches ; any small vessels that bleed are clipped and left on, or may be secured by ligatures. As a rule, they are small and soon cease bleeding. There is generally a good deal of oozing, not from any definite vessels, but from many small points of the cut bowel. As a practical point, I have noticed that the more the clots are wiped away, the more the surfaces ooze ; now, therefore, I let the blood clot, and never attempt to wipe or wash it away. A little dry absorbent wool is then applied to the wound, and the whole is covered by some dry gauze. When this has been done, patients can be fed more freely, a commencement being made with a fish diet.

It is easy enough to open the gut as above described when it has been drawn out to make a good spur, or when the supplementary operation has been performed. But when there has been no attempt at a spur, or there has been no possibility of obtaining one, it may be somewhat difficult to find the bowel, which is smothered in lymph and does not protrude beyond the level of the skin. I myself have never experienced any trouble in this respect. I usually open this kind of case by inserting a sharp knife downwards in the centre of the wound into the gut; and as soon as wind escapes, I know that the bowel is opened. The enlarging of the puncture is best made with scissors. Those who have found any difficulty in opening the gut should put in one guide-stitch at the operation, leaving the ends free; this will afterwards enable them to tell where the gut is to be incised.

The day after the gut has been opened, I begin to make the bowels act, usually giving half an ounce of castor-oil or a good dose of compound liquorice powder. If, as is sometimes the case, this fails to open the bowels, I examine the colotomy orifice with the finger, to discover whether there is any impaction or hard piece of fæces that blocks the way. If there is, I break it up with the finger, and administer

through the opening a good injection of about 4 oz. of olive-oil, and repeat this, if necessary, in about six hours' time. When the bowels begin to act, the wound is dressed with wool soaked in carbolic lotion, or in any other antiseptic that is preferred—sanitas, perchloride, etc.

When the bowels have once begun to act, they should be kept carefully opened daily by means of the laxative that suits the patient best. If one day is missed, the colotomy orifice should be examined with the finger, to see if there is any impaction ; if any is found, it must be treated as I have just described. This examination should always be made, for in these cases there are frequently hard fæcal masses which have accumulated for weeks, or perhaps months. They are moved on by the purgative, but they do not dissolve readily. Hence they may require to be broken up before they can be passed by the colotomy opening.

About the end of the first week, when the bowels have been well emptied, the overhanging pieces of gut may be removed ; *i.e.*, when a knuckle of gut has been pulled out to make a good spur, any excess of gut may be cut away. These overhanging edges are removed with scissors about one-eighth of an inch from the

skin-edge. Whatever vessels bleed are picked up; sometimes as many as six require securing, sometimes none at all. The clips may be left on for a few hours, or the vessels may be tied, just as the operator pleases. No anæsthetic is required. I have already explained how my earliest cases showed that no pain whatever was caused by opening the gut or by cutting away its walls.

I now come to the treatment of the gut when the supplementary operation has been performed; that is to say, when from 6 to 12 inches of gut have been pulled out of the abdomen and fixed outside the belly-wall. Here, again, as after the simple inguinal operation, on the second day the bowel is just opened and the patient is purged. In a week or so, the time varying according to the condition of the patient, the gut has to be removed. An anæsthetic is then necessary, for interference with the mesentery causes pain. When the patient is thoroughly under the influence of the anæsthetic, I take my spiked clamp (see Fig. 20, p. 72) and undo it; that is to say, unscrew one bar from the other. I then place one bar on one side of the gut close to the skin, and the other on the other side. I now insert the screws and screw the two bars firmly together—in fact, as tightly as I can. Then, with scissors, I cut away the gut above the

clamp, keeping about one-eighth of an inch from it. As I divide the intestine I screw up the clamp tighter and tighter, so as to prevent the stump slipping through it. This tightening is continued until the mass of gut has been removed. Dry wool is then applied on the clamp and stump.

If the patient has pain when he recovers from the ether, morphia or opium is given. In twenty-four hours' time the clamp is very gradually slackened, and if any bleeding points are observed they are clipped and ligatured, and the clamp is screwed up again and left for another six hours. After that time I have never found any bleeding. I then very carefully slacken and remove the clamp, being cautious not to disturb the stump, which is then dusted with iodoform. Do not give a purgative till the next day, when the bowels commence acting as usual. If these most important details are attended to, no ill results will occur.

The sutures which were respectively used to fix the bowel to the skin and the parietal peritoneum to the skin are removed when they appear to irritate. Some sutures never do so, and may be left alone till they become exposed; they are then removed.

Soon after the walls of the gut have been

removed, or the supplementary operation been completed, the patient may be allowed to get up and lie upon a sofa, having the colotomy opening dressed with some simple ointment, and supported by a pad of wool.

If the inguinal opening is looked at after the operation has been completed, there will be seen to be two openings resembling the orifices of a double-barrelled gun, with a complete spur dividing them. Occasionally there is a little tendency to contraction, but this is rare in my cases, because the gut has been well fixed up and united to the skin-edge; in fact, it does not retract as in Mr. Cripps's mode of operating. Any tendency to contraction can be easily kept in check by the daily passage of the finger into the upper opening; it should never be passed into the lower opening, for that may be allowed to contract as much as possible, since it is no longer needed as a vent for fæces.

Rectal irritation after the operation may be due to some of the old fæces being lodged in the lower bowel. These may be got rid of and relief obtained by gently syringing with Condy and water into the lower orifice towards the rectum, and then from the rectum through the lower orifice. Thus any retained fæcal matter will be washed away, and all sources of irritation be

removed. In a very short time the lower portion of the gut, from having no fæces passing through it, will contract, and become merely a narrow passive tube.

In about a fortnight the patient may take a drive, and at the end of three weeks may go about as usual, wearing either a special truss I have had made for these cases, or an ordinary abdominal bandage. The patient's own comfort must decide which is to be used.

The question now arises, How are the bowels to be managed afterwards, when they want to act? The patient can generally tell when, and with a little practice the morning can be made the regular time. A kidney-shaped bowl is placed under the opening, and into this the fæces pass. When the bowels have emptied themselves, the part is gently sponged, and as a rule the matter is over for the rest of the day.

Diarrhœa may give trouble, but this may be prevented by a little care in diet, and by an avoidance of anything of a purging nature. Other remedies are the use of quinine and iron, and the taking of two or three lozenges of ipecacuanha and morphia, or even a little opium. After left lumbar or left inguinal colotomy, the motions are generally quite solid. This state is far more difficult to procure after trans-

verse, right lumbar, or right inguinal colotomy ; for by these operations most of the large intestine is eut off from action, and thus the fæees eome almost direct from the small intestine to the eolotomy opening, and are usually liquid or only semi-solid. For this reason these three higher operations are generally more distressing than those on the left side, whieh give little inconvenience. Many of my patients, who are busily employed (and some of them married), have far more power and mueh less discomfort than they had before colotomy ; for before the operation they used to be constantly annoyed by the diarrhœa whieh followed upon the ulceration and strieture, or eaneer. In those states, as we know, the bowels act involuntarily and frequently, for my patients had been afraid to take drugs to bring on constipation, for fear of consequent obstruction and pain.

CHAPTER XI.

A FEW REMAINING POINTS.

I HAVE a few additional remarks to make with regard to the various modes of colotomy.

Vomiting after these operations is extremely rare; this is quite contrary to what was expected to result from a piece of gut being fixed and exposed in a skin wound. It was thought that symptoms of strangulation would be marked, but such is by no means the case. Nor, as a rule, is there any vomiting when the clamp is applied in the supplementary operation, in spite of the gut being not only severely pinched, but also absolutely constricted for some hours. I have employed the clamp only in left inguinal colotomy, where the temporary strangulation is very near the rectum; thus I cannot say what the effects would be in a right lumbar operation, which is much closer to the small intestine. Still, I am of opinion that there would not be troublesome vomiting, for the clamp is not left on for any great length of time.

In these operations there is practically no high temperature, more particularly in the inguinal modes, where no planes of cellular tissue are left open and allow absorption of fœtid materials. For the first few days there may be the ordinary traumatic chart, *i.e.*, temperature may rise to between 99° and 100°; but there is never any further rise unless there is one of the severe complications mentioned in an earlier chapter. In none of my cases has excess of temperature ever given me any trouble.

As I have previously said, usually speaking, left inguinal is the best of all the modes of performing colotomy. The tactics used by the advocates of lumbar colotomy oblige me to dwell once more on my preference for the left inguinal mode. Many surgeons who restrict themselves to lumbar colotomy have published numerous cases, and have never admitted that there were any drawbacks in their operations, though from my own cases, and others which have come under my notice, the many disadvantages of the lumbar mode are obvious. Still, they have been altogether ignored by performers of lumbar colotomy alone. The statistics compiled and the records published in such a manner can be of little or no value. I myself have freely admitted whatever drawbacks I have observed in any other of the

modes of colotomy. Left inguinal eolotomy is frequently alleged to show a considerable proportion of fatalities. Now, out of my sixty eases I have lost only two patients who died from the effects of the operation. If patients live for fourteen days after left inguinal eolotomy, they may be surmised to have reeovered from the operation itself.

Besides the reasons already assigned, there are other points whieh lead me to prefer the inguinal to the lumbar method.

In the former the position for operation is undoubtedly better, both for the patient and for the surgeon. In the lumbar position the intestine has a tendency to fall away from the loin, and this is sure to happen if there is a well-marked mesentery, thus adding to the difficulty of finding the gut, and necessitating a larger incision, the introduetion of the hand into the wound, and, therefore, eonsiderable disturbance of the eellular tissue about the loin. But, in inguinal colotomy, owing to the position of the patient, the sigmoid flexure will not fall away from the opening, in spite of its having a decided meso-eolon.

Some say that the sigmoid flexure is more movable, and has a better-formed mesentery than the eolon, and is therefore more diffieult to find. That is not so. We know that in inguinal

colotomy the peritoneal cavity is opened intentionally, and, as I have before said, my incision, 1 inch internal to the anterior superior spine, is much higher than is usual, and was chosen out of the many others because it is near the juncture of the sigmoid flexure and the colon, a point from which the abdomen can be best explored. Some years ago, kindly assisted by Dr. Sisley and Dr. Des Voeux, I examined, at St. George's Hospital, more than 500 post-mortem cases. We found that the rectum was situated on the right side of the pelvis in only two cases, and in both these the sigmoid, at its junction with the colon, was found in its normal place.

Again, the peritoneal cavity being open, from the incision I use, the following points in the abdominal cavity can be felt: if the finger is passed upwards, the last two ribs, the crest of the ilium, and the lower part of the kidney; if downwards, towards the true pelvis, the first part of the rectum. Exploring towards the middle line, the last three lumbar vertebræ and aorta can be easily distinguished. I have never had any difficulty in finding the sigmoid, by tracing it down from the colon or up from the rectum, even if it had a long mesentery.

The objection has been urged that, in inguinal colotomy, the opening in the gut is not high

enough or far enough from the diseased part. This depends on the operator, for I have frequently tested it on the dead subject by first performing inguinal colotomy, and then, before fixing the sigmoid colon, passing it through my fingers, so as to reach the highest point that could be drawn into the wound and opened. I next turned the subject on to the right side, performed left lumbar colotomy, and stitched the gut to the loin; I then opened the abdomen, and measured the piece of gut between the two fixed points, with the result that, in the majority of cases, there were only 4 inches of intestine between the two openings.

I have already stated that I do not deny the peculiar advantages of lumbar colotomy in certain conditions for which it is best fitted. It should be done when the growth is too high to allow of the inguinal method, or when the patient has been left too long, and has become so distended that the gut has to be opened at once. In such cases the lumbar mode may be advantageous, for it may then be possible to open the gut on its non-peritoneal surface. However, my former discussion of the matter will have shown that this possibility is rarely even a probability.

I am now becoming disposed to think that, if the growth is too high in the bowel to admit of

left inguinal colotomy, a transverse colotomy might be the best to perform. There may then be the possibility of making a good spur; the opening is more under the patient's control, and there is less likelihood of prolapse. The arguments used in the comparison of the left inguinal and lumbar modes apply when we consider these operations on the right side, when the disease is about the hepatic flexure. The easier management of the artificial anus by the patient, and the less likelihood of prolapse, give the preference to the right inguinal over the right lumbar mode.

I may here briefly mention that the following operation may be with advantage borne in mind:

If the stricture be near the cæcum, and the lower part of the large intestine be healthy, then if the patient is seen early—before the distension is great or the large intestine is too full—I am not at all certain whether it would not be better to unite with Senn's plates the part of the gut on the proximal side of the stricture to some part of the gut beyond; that is to say, on the distal side of the stricture. For instance, should the stricture be at the hepatic flexure, it might be well to unite the transverse colon with the ascending colon by means of Senn's plates, even though it might be necessary to divide some of

the transverse mesentery in order to bring the transverse colon towards the ascending colon. Or, again, the transverse colon might be divided about 2 inches on the distal side of the growth, and its rectal end be implanted into the ascending colon on the proximal side of the growth, seated at the hepatic flexure of the colon.

Plainly, all such proceedings are out of the question if the patient is greatly distended, or if the colon is a mass of stricture, with or without ulceration, say from the hepatic flexure down to the rectum.

Nevertheless, I have made these rough suggestions, for I think that they should, if possible, be tried instead of colotomy, when the growth causing the stricture is limited, and especially when it is of an innocent nature. Of course, if it is possible to remove the strictured portion, that should be done.

In my introductory chapter I stated what this work would be—a study of my experiences in the practice of the various methods of colotomy, and a setting forth of the many important details I have learnt in the management of such cases.

All my endeavours have been directed towards improvement in these operations, so that a successful issue may be arrived at in each par-

ticular instance, and that the patient's comfort and future welfare may be considered without any dogmatic adherence to preconceived notions as to the presumably orthodox procedure. I have pointed out the advantages of each method, and I have not attempted to slur over drawbacks when I am conscious that they exist. I have explained the reasons which first led me to adopt the inguinal instead of the lumbar mode ; there has been no attempt to hide the imperfections of some of my earliest cases. I have freely discussed the supplementary method and the various modifications that seemed to be requisite. The cases in which inguinal colotomy is not desirable have been narrated ; reasons have been assigned for the non-performance of the supplementary method under certain conditions. The best occasions for the employment of the left lumbar operation have been mentioned ; the less common colotomies on the right side have been discussed, and the advantages of the use of the transverse method have been expounded.

It will thus be seen that I have striven to treat the subject of colotomy in a thoroughly impartial way, devoid of all bias, and actuated only by a desire to relieve in the best manner possible the various conditions of cancer, ulceration and stricture of the large intestine. I have

learnt by my own experience. My labours will not have been in vain if some of the details I have employed, and the suggestions I have made, should prove to be of some little use to others.

THE END.

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